

**An Information System for Greenacres  
After School Care (Happy Days)**

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## Summary

The main objective of this project was to identify the opportunities of using IT to improve the working practices and information management at Greenacres After School (Happy Days). Consideration of the National Standards pertaining to child day care was taken to ensure that any IT solutions proposed would meet the standards. The analysis of the current working practices following sessions of ethnographic observation and the understanding of the user's needs and capabilities through interviews and the development of a rich picture were fully considered to improve the quality of the recommendation. Consideration of the alternative existing solutions available was also taken to enhance the proposed solutions. A feasibility report was developed to aggregate the work done and formulate a presentation which was given to managers to summarise the findings of the report and provide a recommendation in a straightforward and timely manner. Approval of the proposed solution and user participation during design through a UML workshop and interfacing meeting allowed the design of a full ideal systems solution to be developed. The prioritisation of the specifications led to the development of a prototype modelling part of the ideal systems solution. End user testing and simulations of real working situations facilitated in the gathering of user feedback and the evaluation of the prototype. Amendment of the faults found during testing and the incorporation of temporal attributes and operations allowed the prototype to develop into a system that was handed over to the users. Consideration of the user's technical abilities was again taken in the development of a supporting user manual for the system, also handed over to the users. Evaluation of this user manual and an assessment of the project in terms of its achievement of the objectives and of the lessons learned conclude this project.

This project was effectively and professionally managed throughout, building a positive relationship with the end users to aid in the achievement of major milestones and improve the quality of deliverables.

The major achievements of the project are thus:

- An appreciation of the current working practices and the existing ICT solutions available for day care providers.
- An appreciation and conformance to the National Standards legislation governing day care providers.
- User participation through a UML workshop and interview to improve the quality of the design.
- Development of Greenacres Management System and user manual to hand over to the managers at Greenacres.
- Critical evaluation of the prototype and user manual against the National Standards, agreed specifications and heuristic criteria and assessment of user feedback.

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## **Chapter 1: Introduction**

### **1.1 Problem Definition**

For some time the Government has recognised that there is a need for good quality, affordable childcare to be provided to families to help parents to balance their increasing work responsibilities with their family life. Childcare may also benefit children during their early years, allowing them to develop the essential social skills and motivation to learn that will provide a good foundation for future learning and social interaction. To ensure that good quality, affordable childcare is provided, each provider is helped by the local branch of an organisation named Sure Start. The assessment of the quality of the childcare and conformance to the National Childcare Standards is undertaken by an organisation named Ofsted.

The partnership of Greenacres After School Care (Happy Days) is a childcare provider that aims to tackle the issues of providing care so parents can work, and giving the children a good foundation for further education. Their before and after school scheme and holiday scheme help parents to make the most of the jobs available to them and the playgroup (Happy Days) scheme ensures young children develop the skills they need for when they start school.

Running an organisation that provides these different types of childcare schemes is both time consuming and complicated. The managers not only have to handle the business aspects, such as buying supplies and the administration and daily registration of children, but also look after the children during the day and so focus on their well being and safety.

This situation is currently further exacerbated by the fact that all their records, administration details and registers are generated from age-old photocopies, then modified and worked on by hand. Some records are also recorded in standard exercise books, with little or no referencing in these books, making finding particular information a long and almost impossible task. The hand-written presentation of these documents can discourage parents from enrolling their children at the facility. The paper-based nature also means that in the event of fire or burglary all their records may be lost, with no replacement, showing poor contingency planning in the eyes of the regulatory bodies.

### **1.2 Project Aim**

The aim of the project is to identify the opportunities in using IT for improving the work practice and information management involved in running Greenacres After School Care (Happy Days) and to apply SSM and ethnography in the investigation to improve the quality of the recommendation.

### **1.3 Project Objectives**

The objectives of this project are:

1. To research a number of project methodologies and formulate a methodology most suitable to this project. This includes researching ethnography, SSM and feasibility study techniques.
2. To examine the National Childcare Standards pertaining to childcare providers and identify the possible impacts the legislation will have on the derivation of an IT solution.
3. To produce a feasibility report that will discuss the options available and how these may solve the problems, and provide a recommendation.
4. To involve users in major decision points such as signing off the feasibility report and determining the functionalities of the prototype.
5. To produce a design of the full ideal systems solution..
6. To implement as many functionalities as time permits according to the priorities agreed with the users.
7. To evaluate the prototype and make refinements if necessary for the final version.
8. To handover the ownership of the system to the users.

#### **1.3.1 Minimum Requirements**

The minimum requirements of this project that will be considered during the evaluation are:

1. To acquire and in-depth understanding of ethnography techniques, SSM and feasibility study.
2. Document the results of the analysis on the current working practices of the organisation and their requirements for an IT solution.
3. Produce a feasibility report into the possible solutions to the problems with the organisations' working practices and get approval on the way forward.
4. Design/implement a prototype to solve the working practice problems.
5. Produce a summary of user feedback and an evaluation on how the created prototype provides a solution to the problems.

Further enhancements to this project with the allowance of time after all minimum requirements have been completed are:

1. Modify the demonstration prototype into a system that may be given to the organisation to use year on year (this system will still only provide the agreed functionality).
2. Handover this final system with a full User Manual.
3. Evaluate the effectiveness of the handed-over system and the quality and clarity of the user manual.
4. Deliver a system that solves **all** the working practice and information management issues identified.



### 1.3.2 Deliverables

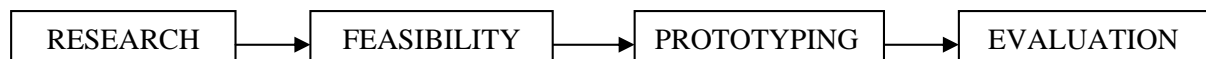
The Deliverables for the project are thus:

- A Project Report.
- A Presentation on options to be delivered to the Organisation's managers.
- A working prototype to be used for demonstration and user feedback.
- A working system and supporting user manual to hand over to the organisation.

An extra deliverable has been added since the mid-term report as time allowed the prototype to be modified into a system in its own right and so be handed over to the users with a supporting user manual. This system can be used by the organisation year on year as appropriate time considerations were incorporated into the second and final iteration of the prototype to produce the system.

## 1.4 Project Approach

The recommendations and system of this project have been developed with a user centred approach, as it is often seen that systems can be rendered useless if consideration of the users and their needs as they work is not taken. The development of the project flows through the following stages:



Detailed background research into methodologies, tools and techniques that have been considered relevant to this project was done using a number of resources; an Internet Search Engine to search for specific texts or articles containing specific words effectively and provide up to date information; the online journal facilities provided by the University library to find relevant articles; using previous years' module lecture notes, resources and recommended reading as relevant; using case studies in journal articles for insight into how specific techniques and methods are used in the real world.

A feasibility study was conducted using techniques such as ethnography and rich pictures to gather data and feedback for further analysis. Research was carried out into possible alternative solutions available and then into the development of a solution that would fit the users' needs. An appreciation of the National Standards pertaining to child care was also sought to ensure any recommendations would conform to the legislation researched. A feasibility report was produced and presented to the managers in the form of a presentation summarising the main points of the report. A handout was given out to accompany the presentation that represents a less detailed version of the report, as the report may seem too technical for the managers. The actual report was handed over to the managers with the view that it could prove useful for further investigations into IT that may be undertaken. The presentation of the results of the study concluded with a discussion as to the way forward and the development of a set of agreed prioritised specifications for the solution. Following the discussion and feedback from the feasibility presentation, a UML workshop was held with the managers to develop a class diagram of the

various objects that are used within the work practices of the organisation. A logical system structure that models the ideal solution was developed from this. With respect to the usability and interface of the system, sample screen shots and a logical menu structure were discussed with managers to obtain approval of the proposed interface design.

The approach to prototyping taken in this project was both incremental and evolutionary [25]. The initial prototype was built along the incremental notion, in that the proposed functionalities were ultimately grouped into logical sections, such as accounting and registration, and these sections were then implemented according to the agreed prioritisation of the functionalities as time allowed. This prototype was then tested by the developer before being demonstrated to the end users (the managers). The managers were given some basic training on how to use this prototype and observed using this prototype. The managers' use of the prototype served as end user testing for the prototype and user feedback was also gathered about the prototype at this stage.

As time was permitting, it was decided that the prototype would undergo a second, evolutionary iteration where it will be developed into an actual system that can be handed over to the user for use year on year. This involved ensuring that any problems found during testing were fixed and introducing temporal attributes [26] into the underlying database and operations into the functionality. In terms of the actual functionalities developed in the first prototype, omitting the incorporation of time, no additional functionalities of the ideal solution were incorporated into this end system. A user manual was created to support this end system and on the 8<sup>th</sup> April the system and user manual were formally handed over to the end user.

The evaluation of the prototype and user manual is an important part of this project. The evaluation techniques used include ethnographic observation and interviews. Evaluation Criteria were formed for the deliverables to be tested against, including not only usability and functionality criteria but also the National Standards criteria established in section 3.4. The evaluation of the prototype consists of the user feedback obtained and the information obtained from observing the use of the prototype. The user manual was also evaluated in respect to its usability and clarity.

To complete the project, a conclusion has been written to assess the degree of success or failure of the project by discussing the achievements made, including those that bring the project outside the boundaries of the developer's degree programme, and an examination of the project's success at achieving the minimum requirements and objectives.

Throughout the project life, time has been taken at each stage to document the proceedings, such as meetings, and information gathered at each stage. This documentation will allow easier and more accurate formation of the report as the documentation was written at the time of conducting that stage.

## 1.5 Project Schedule and Revisions to Schedule

The original project schedule has been summarised in Appendix B. This was the schedule at the time of writing the mid-term report. The final project schedule is detailed in Fig. 1.5.1 below. The major timescales for each of the stages have not changed from the original project schedule, however the tasks have been changed to highlight the actual times when users were involved and consulted throughout the project, in line with the user centred approach, and to highlight the objectives and deliverables as they are described in section 1.3.

<b>Project Task/Activity</b>	<b>Timescale For Task</b>	<b>Milestone to indicate achievement of task</b>
Identify Aims, Objectives and Minimum Requirements	27/09/04 – 18/10/04	Aim Objectives and Minimum Requirements specified
Research Project Methodologies, ethnography techniques, SSM and Feasibility Study approaches	18/10/04 – 15/11/04	Selection of methodologies and techniques
Initial meetings with managers (users) to determine project scope and discuss what the project will entail	12/10/04 and 19/10/04	Scope has been defined and the managers understanding of the project enforced
Perform a context analysis examining the National Standards pertaining to Childcare providers and their impact on this project	25/10/04- 07/11/04	The impacts of the National Standards have been determined and documented
Analyse the current situation using ethnography techniques and rich picture; conduct interviews and visit the setting for work practices observation	08/11/04 – 18/11/04 interview and observation - 09/11/04 and 10/11/04	A full view of the current situation has been gathered and the results of the analysis documented
Obtain clarifications and approval of the documented analysis. Document the clarifications and feedback obtained	19/11/04 – 05/12/04 meeting held 19/11/04	Approval obtained and additional information added to final analysis documentation
Conclude feasibility study with a feasibility report to be present to managers	06/12/04 – 10/02/05	Feasibility report produced.
Holiday and Exam Period	27/12/04 – 31/01/05	-
Present the findings of the feasibility report in the form of a presentation summarising the main points; obtain approval on the way forward; sign off the feasibility report	10/02/05 – 25/02/05 presentation- 11/02/05 sign off- 23/02/05	Sign off of the feasibility report and agreement on prioritisation of specifications

Hold a UML workshop to create a class diagram modelling the system; show users a sample of the proposed system interface; complete the design of system	23/02/05 – 7/03/05 workshop conducted 23/02/05	A class diagram has been formulated and approval of the interface obtained.
Implement functionalities as prioritised by the users; perform developer testing	07/03/05 – 25/03/05	A working prototype has been developed and tested
Progress Meeting with Assessor and Supervisor	17/03/05	Functionality implemented up to this date demonstrated and feedback on project obtained
Evaluate the prototype; gather user feedback via and interview and, after training, observation which will serve as end user testing	25/03/05 – 01/04/05 meeting with managers 25/03/05	Evaluation of prototype, users have been trained and have used the prototype
Make refinements to the prototype to develop it into a system that can be handed over to the user; create a supporting user manual for this final system	26/03/05- 08/04/05	Refinements have been made to the prototype to produce a final system. A user manual has been created for system
Handover system and User Manual to end user	08/04/05 – handover and sign-off meeting	Sign off on the system and manual has been obtained
Evaluate final system and User Manual; complete report and project evaluation	09/04/05 – 25/04/05	Evaluations and Report Complete

*Fig. 1.5.1- Revised Project Schedule that reflects user's involvement in the project.*

## 1.6 Relevance to Degree Programme and Previous Knowledge

The knowledge gained from a number of modules taken over the course of the degree programme has been used throughout this project; project management skills and the derivation of a suitable project methodology have been drawn from project management and information systems modules (IS11, SE22, IS33, IS21). Requirements gathering and analysis techniques have been considered and chosen though the knowledge acquired during people-centred information systems (IS33) and context analysis skills obtained through the information systems module IS23. Techniques for conducting a feasibility study and the production of a report were drawn from the knowledge gained in IN11. The interactive formulation of an initial design and a logical systems design has been accomplished by drawing from object-oriented analysis and design (IS21) and from database modules (DB11, DB21). Technical systems design and implementation skills have drawn from all the database modules (DB11, DB21, DB31) with particular appreciation of time in a database being drawn from advanced databases (DB31).

Implementation of some of the functions of the database also drew upon basic programming skills learnt in SO13. Prototyping and the need for an appreciation of the users' technical knowledge have been drawn from people-centred information systems and project management modules (IS33, SE22), and the need for an appropriate timescale and handover technique has been drawn from IS21 and IS31. Evaluation techniques have been considered in project management and people-centred information systems, however more research was conducted into this subject.

Previous experience of the nature and difficulties in running a childcare facility has been drawn from the experience of the developer's mother. Producing project reports, project management, and project sign-off and evaluation have also been experienced during a number of work placements undertaken by the developer each summer.

## **1.7 Organisation of the Report**

The report has been organised into logical chapters describing the life cycle of the project from initial requirements gathering to development then evaluation. Each chapter has been introduced and will set out what the chapter intends to describe to the reader and what was achieved for the project. Each chapter has then described the background knowledge that has been obtained that is relevant to the contents of the chapter. The main body of the chapter then follows, divided into logical sections that show the development of the achievements of the chapter through time.

Chapter 1 is the main introductory chapter to the project and defines the aim, objective and the approach of the project. It highlights the project schedule and the relevance of the project to the degree programme.

Chapter 2 considers a number of project methodologies and their role in the development of a methodology best suited to this project.

Chapters 3 and 4 contribute towards the production of a feasibility report and a presentation of feasibility study findings for the managers.

Chapter 5 describes how the design of an ideal systems' solution was derived, including the interfaces and menu structure as well as the underlying relational database design.

Chapter 6 describes the technical implementation of the system and developer testing.

Chapter 7 outlines the approach to training and the demonstration of the prototype before describing the end users use as a means of gathering feedback as well as a form of testing. The final changes to the prototype and the hand over Greenacres Management System and the supporting user manual conclude this chapter.

Chapter 8 presents the data gathering techniques used and the process and results of evaluating the prototype and user manual against a combination of legal, functional and usability criteria.

Chapter 9 concludes the project, detailing the achievements made and suggestions for further work.

## **Chapter 2: Methodology**

### **2.1 Introduction**

When choosing an appropriate methodology for this project it is important to take into account the user-centric nature of this project and the importance and emphasis placed on gathering a clear picture of the current situation to effectively identify the opportunities for using IT. This chapter first highlights the major components of IS development methodologies researched to provide an overall methodology for the project; particular emphasis and further research on the socio-technical approach to projects is then described; the use and nature of RUP methodology for design purposes is then investigated; and finally the methodology for the project is constructed and justified.

### **2.2 Types of IS Development Methodologies**

There are a number of trends and general characteristics of all IS development methodologies. Jason Charvat [1] notes that one trend of all methodologies is that they have project phases, measure progress, take corrective action based on defects found and assign resources to various phases. There are also two general families of approaches, described by Avgerou and Cornford in Chapter 9 of [2] as hard and soft. The soft systems' approach to IS development is a very people and business- oriented approach, where the various social influences of systems' development are considered over a more technical, structured development approach that defines the 'hard' school of thought. Both these approaches have a number of methodologies within them that each have a different take on the method adopted to develop Information Systems. In Part 6 of their book, Avison and Fitzgerald [18] also categorise methodologies into five different areas; process- and data-oriented; object-oriented; rapid development; people-oriented and organisational-oriented. Of these, the people- and organisational-oriented methodologies are considered during the examination of the socio-technical approach in section 2.3, and the object-oriented and rapid development methodologies considered in the software development approach in section 2.4.

It can be seen however that all methodologies run through a series common components or phases, whether they are soft or hard. One classic methodology with defined phases is the Waterfall Model.

The Waterfall Model [27] is often described as having seven phases, Project Planning (Problem Definition), Analysis, Design, Implementation, Testing, Deployment and Maintenance. Planning and Deployment are sometimes just assumed and are missed out as stages. This classic cycle has been used for projects over many years, but if followed exactly, has been found to often lead projects to failure. The essences of the terms however are still used in projects today, it is the way these stages are completed that influence success.

Another set of methodologies that has the major components of IS Development identified in the waterfall model is iterative methodologies, for example prototyping and Rapid Application

Development [27]. Iterative methodologies concentrate on completing the stages of the project quickly and repeating them a number of times throughout the timescale of the project to arrive at a final iteration which should be the best model of the entire project and draw on lessons learnt and the results of previous iterations. Repeating stages does provide noticeable benefits, particularly the use of prototyping for the design and implementation phase.

The Information Systems Life Cycle is described by J. Matravars [27] as refinement of the waterfall model for the process of information systems development. It adds an important stage, the feasibility study stage, which better tailors the project to understand the real-world situation and develop a feasible solution to the problem the project is trying to solve. Further discussion of the feasibility study and its importance in this project is given in section 4.2.

## **2.3 Socio-Technical Approach**

In Chapter 8 of Avgerou and Cornford's book [2] the different general approaches to information systems development, such as engineering, socio-technical and ad hoc are highlighted, and give an overview of the methodologies appropriate to each approach. Based on this research, it was decided that a socio-technical approach would be taken towards the project. The socio-technical approach was introduced by the Tavistock Institute [3] in the 1940's and developed well into the 1980's; unlike traditional software engineering approaches and 'hard system' approaches, this approach focuses on the system in terms of the practical, ethical and theoretical concerns. These concerns are linked to the people involved in the system, in that if the people and organisational issues have not been addressed then the system might fail to bring the desired benefits. This can be described as a 'soft system' approach because the focus is on people and their issues and problems rather than technical systems' problems. The technical system problems are still addressed but in terms of the people and organisational problems rather than the reverse.

Enid Mumford [4] developed a methodology known as ETHICS that particularly highlights the socio-technical approach and is an example of a people-oriented methodology according to Avison and Fitzgerald's classification [18]. The ETHICS methodology aims to address the problem in terms of the organisation and its current people processes and overall objectives, the idea being that a good design of the system is not just a technical design but should look at how the people will be involved in and use the system. Addressing the organisational and people issues is seen as the priority with this methodology, and the technical aspects are seen as the means to solving the people-centred business problems.

In her book Enid Mumford states:

“It is (therefore) recommended that ETHICS is associated with user involvement in the design task. Involvement requires the creation of participative groups, and decisions on the amount and nature of their contribution to the total design process must therefore be made.”

Another methodology that is considered to be a 'soft system' approach but has more structure than the ETHICS methodology is Soft Systems Methodology. This methodology is classified as an organisational-oriented methodology by Avison and Fitzgerald [18]. This methodology uses a variety of techniques to aid the development of a project through its stages. Once such technique, known as a rich picture, allows the developer to convey using pictures that do not follow rules and conventions, the nature of a problem and the various people, systems and objects they interact with, and highlight areas of conflict between different items. This technique is further discussed in section 3.6.

ETHICS and SSM have very different guidelines when it comes to design. The ETHICS methodology's approach to design is to first specify social and efficiency objectives, then specify the social alternatives and the technical alternatives, match the social alternative to the technical alternatives, rank these in terms of how well they meet the objectives, then select the best solution [4]. This is rather similar to conducting a feasibility study. As this has been specified as one of the important requirements for this project, to repeat this method again for the design would herald no extra information and so his approach to design does not suit this project.

The SSM methodology also breaks down the problem, this time into a series of root definitions; tasks that need to be completed, which in turn are used to build up a series of conceptual models of the system, which are what activities the system would do in order to achieve the task described in the root definition. These conceptual models are then made more detailed (expanded) and compared against what is happening in the real world. As one of the aims of this project is to involve users that do not have background knowledge of how system design works, it is believed that this method is too complicated as well as being too time consuming for this project. The resulting conceptual model may be too technical or complicated to talk through with the end users. Issues of scope may also come into play as the users will have many ideas which will turn into root definitions of what the system should do and so analysing each definition would take too much time.

## **2.4 Software Development Approach**

It is important to consider methodologies and their approach to the software development aspects of a project in order to choose some guidelines that would best fit this project. The approach to software development considered most appropriate for this project is one which may quickly and clearly construct a design for a solution and allow users to participate in the design, and one which allows the construction of a sample solution and possible further solutions to be developed.

Prototyping has already been mentioned as a software development approach that would be suitable for this project. This is because prototyping is iterative in nature; it is designed so that solutions may be quickly implemented to gather requirements and feedback so a second prototype may be built. Sommerville [24] and Matravars [27] highlight two different uses of prototyping in software



development that are particularly relevant to this project. The first is an incremental notion, that sections of the ideal solution may be modelled by the development of a number of prototypes in a ‘modular’ format, that are ultimately joined together to form the whole solution. The second is the evolutionary notion where each iteration of prototype builds upon the last until a final complete version of the system is built.

A methodology that particularly enables quick construction of design in a logical manner, and that from previous knowledge during the modules IS21 and SE22 gives good results when discussing the design of the system amongst people with limited IS knowledge is RUP. RUP is predominantly a document-driven methodology, where document templates are used to cover all aspects of the project life cycle, such as the Vision document for describing the problem definition and scope. Although RUP is not strictly people-centred unlike ETHICS and SSM, it uses a tool known as UML, which is pictorial in nature, that it is believed will be useful for describing and discussing a systems’ design with the users. UML is further discussed in section 4.2.

## **2.5 Chosen Methodology for this Project**

Jason Charvat [1] discusses methodology definition and the general benefits and shortcomings of using a methodology. He goes on to discuss the basics of project management and how this creates a need for a methodology and describes a strategy for choosing a methodology.

The conclusion was drawn that a methodology is a set of guidelines and principles that may be used to successfully complete a project. The choice of principles and guidelines that make up this methodology is directly influenced by the nature of the problem that is to be solved by conducting the project. Therefore, the construction of a methodology for a project may involve choosing particular principles from a number of methodologies as a means of successfully meeting the project end. This approach is the approach that has been taken for constructing the methodology for this project.

After reviewing the common components of all methodologies and paying particular attention to user-centred methodologies, the methodology that would best suit this project is one which combines the structured stage nature of the waterfall cycle; the user-centric, participative approach of the ETHICS methodology; the soft systems, diagrammatical approach of SSM to convey information to non-technical people; the structured and pictorial approach of the RUP methodology for designing systems and an incremental prototyping approach to systems’ implementation.

As communication with users is important throughout the project, the use of pictorial information and the hands on approach to analysis will enable the developer to understand the problem fully and communicate their ideas for improvements and to confirm their view of the current situation in a non-technical and friendly manner. The particular techniques of SSM and ETHICS methodologies, rich pictures and ethnography are further discussed in Chapter 3. The methodology RUP, in particular the use of UML will allow for the creation of a structured design that users will still be able to participate in.

This technique of RUP is further discussed in Chapter 5. At the implementation stage, the project turns into a more software engineering, hard systems'-based project where technical implementation and testing are key areas and the users involvement changes to become a less direct and more evaluative in nature. The use of prototyping to aid in the evolutionary development of the system at this stage was considered appropriate for this project, with the permittance of time.

The Waterfall Cycle holds the most logical and natural steps for setting milestones and targets to provide a main structure that is suitable for the nature of this project. This also was selected over the project steps of ETHICS, SSM and RUP as the techniques other than those selected were seen to be too complex or will take too much time from the project to make them worthwhile.

## **Chapter 3: Requirements Analysis**

### **3.1 Introduction**

To get a full understanding of the current situation and the possibilities for improvements using IT, requirements analysis must be undertaken. This chapter first details the context analysis undertaken to better understand the organisation and the bodies that govern it, and to determine any possible impacts the results of the analysis will have on the solution that will be developed. In section 3.5 the techniques used during requirements analysis have been researched and justified. The requirements analysis then begins with the identification of the scope, focus and the informants to be included in the research session. The method used to gather information on the current situation and working practices of the organisation is described in section 3.6.1. Section 3.6.2 explains how this information gathered was used and processed to determine the Main Outcomes and final documentation of the analysis. The requirements analysis chapter is concluded by an explanation of the feedback and approval obtained from the managers in regards to the analysis documented, the method used to obtain the feedback and the main outcomes resulting from the feedback.

### **3.2 Greenacres Organisation and Human Resources**

Greenacres Before and After School (Happy Days) is a childcare provider within the district of Oldham Council. The organisation ultimately consists of three different types of childcare; the before and after school, that caters for up to 66 children aged between 3 and 8 for one and a half hours before school (which starts at 9:00) and until 17:30 when school finishes each weekday during term time; Happy Days Playgroup, which takes up to 35 children aged between 2 and 5 for playgroup sessions lasting between 9:30 and 13:30 during term time; and the holiday play scheme, which runs for 66 children aged between 3 and 8 from 7:30 to 17:30 during school holidays [5]. The organisation consists of two managers, Lesley Jones and Susan Pugh (who will be the main contacts during this project), two supervisors, who predominantly oversee the children's well-being and activities during the sessions, and 7 members of staff who generally look after the children during all these sessions and are required to take the children to and from school. The premises they use for this service (also known as the setting) is located at Greenacres Methodist Church, and consists of two floors, the ground floor which is used for older children (usually aged between 6 and 8) and the first floor for younger children. The organisation is known by a number of names, however the official name for them as listed on their Ofsted report [5] is "Greenacres After School Care (Happy Days)". When talking solely about the playgroup it is referred to as "Happy Days", and the managers often refer to the business simply as "Greenacres". For the purposes of this report, the organisation as a whole will be shortened to "Greenacres" and the different types of childcare as "Before and After School", "Happy Days" or "Playgroup", and "Holiday Scheme" as appropriate.

### **3.3      Childcare Regulatory Bodies and the National Standards**

As with most businesses, there are a number of regulatory bodies that govern and aid organisations in their provision of childcare to their community. Indeed, regulation and standards are particularly important within the childcare sector as families are entrusting the care and well-being of their children to these organisations and will want to ensure that their children are receiving the same standard of care as they would do when being looked after at home.

In the DfES Departmental Report for 2002 [6], there is a chapter on Early Years where the regulatory bodies associated with Under Fives education and care are identified. It was found from this document that the main governing bodies are the DfES and the Office for Standards in Education (Ofsted), and these bodies work with an organisation called Sure Start that aim to help families and children with social or emotional problems and children with special needs to get an education at this early stage of life. The government bodies have also developed a National Childcare Strategy to ensure there is quality, affordable childcare available in every neighbourhood across the country, and their Early Education Places scheme allows all three to five year olds to receive a free early education place at a playgroup to particularly aid financially disadvantaged families.

Under the Care Standards Act 2000, Ofsted are the main regulatory body that aim to ensure the early education and childcare requirements as set out by the National Standards are being adhered to by the different childcare providers. Childcare providers must register with Ofsted and pass an initial inspection before they may to commence business. Ofsted perform yearly inspections of Greenacres, its practices, its people and the building they are set in to ensure they comply with the National Standards set.

Each council district also has its own branch of the organisation Sure Start, who help the childcare providers in that district to comply to the National Standards so they may pass their inspection. Sure Start also take care of the financial administration of the early education places (or grants) for each childcare provider within their district. The Sure Start advisor assigned to Greenacres and with whom the initial idea for this project was devised is Krishna Sissadia.

The National Standards that have been set out by Ofsted may be seen as the main governing legislation for Greenacres, and so it is important to ensure that any system that is proposed will allow the business to achieve these standards. Greenacres' first inspection report [5] provided me with further details about the business as described in section 3.2. The childcare the business provides comes under the headings of Sessional Care and Out of School Care, where the guidelines for Out of School Care cover the Before and After School and the Holiday Scheme. Ofsted have published guidelines to the National Standards for each of these types of care [7, 8].

### 3.4 Impacts of the National Standards on this Project

To summarise section 3.3, any system devised must comply with the National Standards to allow the organisation to pass its inspection. It is expected that the devised system will be most impacted by the legislation relating to the recording and storing of information generated day to day by the business, as this is the obvious primary benefit using IT can give. Because of their importance, the guidelines identified will serve as criteria for the evaluation of the system.

The National Standards guidelines of the two types of care that are particularly relevant are:

- *Standard 2- Organisation*
  - **Records (2.6)**- Under the Children Act, “you must keep on the premises the name and address and telephone number of yourself, staff members, anyone living or employed on the premises, and any other person who will regularly be in unsupervised contact with the children.”
  - There must be a suitable registration system as stated under Registration System (2.13).
- *Standard 6 – Safety*
  - **Security (6.4, 6.5)** – A visitors book should be drawn up.
  - **Fire Safety (6.9 – 6.11)** – Under the Children Act, “you must keep a statement of the procedures to be followed in the event of a fire” and it is recommended that a fire log book is kept.
- *Standard 7 – Health*
  - **Medicine (7.7)** – Under the Children Act, “you must keep a record of all medicines administered to children.”
  - **First Aid (7.8 – 7.11)** – Under the Children Act, “you must keep a signed record of all accidents to children, and notify Ofsted of any serious injury or death to any child in your care or adults on the premises.”
- *Standard 8 – Food And Drink*
  - You must provide records of a child’s dietary needs if applicable.
- *Standard 9 – Equal Opportunities and Standard 10 – Special Needs*
  - You must provide a record of the each child’s ethnicity or special needs
- *Standard 12 – Working in Partnership with Parents and Carers*
  - **Exchanging Information (12.3)** – Under the Children Act, “you must keep records of the name, address and date of birth of each child and the name, address and telephone number of a parent.”
- *Standard 14 – Documentation*
  - **Length of time records are to be kept (14.1)** – Under the Children Act, “Certain records must be kept on the premises and some must be retained for a period of two years.”
  - The remainder of this section details the necessary records that need to be kept, how long they need to be kept for and where they need to be kept, along with a suggestion of other documents that may prove useful for a business to have.

One particular piece of legislation that must serve as a clear requirement of the system is the advice given in section 14.2 – Availability of Records. The guidelines state:

*“You need to ensure that the records you keep which relate to your activities as a day-care provider (NOT the business) are available for inspection by Ofsted at any time. This means that you should keep these records:*

- *On the registered premises when the out of school provision is running;*
- *Where they can easily be accessed but not by unauthorised people (Standard 2: Organisation, 2.5).*

*If you keep records on computer, you need to bear in mind:*

- *How the records can be shown to child care inspectors promptly if they ask to see them, even if you or your manager are not present at the time. For example, if they are protected by a password, it must be available immediately;*
- *Your responsibilities under the Data Protection Act. If records relating to individual children are kept on computer (as opposed to information about the business) you may have to register under the Data Protection Act (see Standard 2: Organisation, 2.5).”*

If any system is handed over to Greenacres to be used by them year on year, it must therefore be explained to the managers that they need to discuss with their Sure Start advisor about registering under the Data Protection Act and the procedure for making information available immediately.

### **3.5 Analysis Tools and Techniques**

As the role of the people involved in the business has been identified as an important consideration for this project, one of the best techniques for project analysis that takes into consideration the people issues is ethnography. Burke and Kirk [14] describe ethnography as “not so much a method as a category of human-computer interaction research”. This means that there is no exact way of using ethnography as such to help to identify processes and people interactions, but the principles within ethnography can be adapted to help assess the users’ needs and ascertain the role that they play within business operations. The idea of ethnography also suggests that the ethnographer can get actively involved in the business to identify the needs from the users perspective, which can be a valuable tool in identifying new areas and problems that the user may not have identified in an interview situation.

Overall ethnography involves a mixture of inquiry, where the ethnographer may ask focused questions; observation, where they will simply observe the business in action and the different processes without asking questions; and participation where the ethnographer involves themselves in business activities and processes to better understand what is involved.

There are a number of different ways in which an ethnographic study can be conducted. Burke and Kirk [14] briefly describe the quick and dirty method and the paper by Hughes et al [15] describes the usage of this method. This method would be particularly useful initially for getting an overall feel of the

current situation, however further more detailed ethnographic study then needs to be conducted.

Concurrent ethnography as described by Burke and Kirk [14] is the most intensive ethnography method and requires the most time and cooperation between the ethnographer and the users. The benefits and shortcomings of this method of ethnography are discussed by Hughes et al. [16] who suggest that this ethnography be implemented continuously throughout the project, however in doing this they found that the information relevant to the project was gathered fairly early on and that further information gathered, although sociologically valuable, had little impact on the project.

Rapid ethnography is the most recent ethnographic method and involves setting out 'constraints' for the ethnographic study before it commences such as the main scope or focus (derived possibly from an initial meeting) and the key informants (the people that are involved in the system). David Millen's [17] case study of the use of rapid ethnography provides a valuable insight into how it is used, however he focuses on the use of multiple ethnographers to collect information whereas this project will only involve the author as chief ethnographer.

It was decided for this project that the use of ethnography would mainly draw from the rapid ethnography method, in that the scope, focus and informants would first be identified as a basis for each ethnography session. This focused ethnographic analysis should continue throughout the project however as advocated in concurrent ethnography method, to refine the developer's understanding of the problem and improve the quality of the solution.

The *Evaluation Cookbook* [23] identifies interviews as an important data gathering tool as specific questions can be asked to clarify points and shed new light on ambiguous areas that may have been discovered. Interviews have also been used therefore as part of the overall data gathering method.

Another important technique that will aid in the presentation of the current situation to the managers once the analysis has been conducted is the rich picture, which is part of the SSM methodology. A number of articles were consulted [18 pp.157-159, 19, 20] briefly to get a further feel as to the use and application of rich pictures for conveying the problems and situation of the business in question. These articles were unanimous in stating that a rich picture aims to capture and present as much information as possible about a situation, in particular how the people involved in the system communicate and interact with each other and other entities of the system. This aspect is the most important and relevant and is not modelled in other diagrammatical techniques such as data flow diagrams or ER-diagrams. It is also a key point within these articles that the rich picture is not bound to any diagrammatical rules and conventions (unlike UML, for example) and so it can be made as complex or as simple, as technical or as straightforward as is needed. This is important for this project due to the need to communicate with non-technical users that may find it hard to understand the conventions of, for example, UML diagrams.

### 3.6 Problem Analysis

The feasibility study begins by first conducting research and analysis into the problem to be solved so as to gain a better understanding of the requirements of the system and to determine whether the production of a suitable solution is feasible. Initial meetings held with managers at Greenacres on the 12<sup>th</sup> and 19<sup>th</sup> October 2004 provided general information about the business and its day to day activities. This information has allowed the scope, focus and the informants [17] to be identified before the interactive research using ethnography techniques will begin.

The **scope** of the research will cover the working practices of the Before and After School and Playgroup. Such things that are not included in the scope are the accounting methods of the business as a whole, the provision of a dancing class for After School children, the process of buying and maintaining the supplies for the organisation, such as food, cleaning materials etc. and longer term activities that cannot be fully researched given the time limitations of this project. If time and convenience allows the scope may be extended to include the Holiday Scheme and the long term planning of Early Years Learning Goals, which are taught to children attending the playgroup.

The **focus** and particular questions to be answered by the research include:

- Identifying the current processes that occur daily, weekly and if possible, in the long term.
- Identifying any artefacts that are currently used.
- Identifying the people (informants) involved at any and all stages of the business cycle.
- Determine what types of information and data are used and how or if it is stored.
- Witness and record the interactions of the informants with one another and the nature of sharing information within the business.
- Identify how and when these processes and interactions occur within the business and how much work is done by the different people in the business.

The two main ‘field guide **informants**’ [17] identified are the two managers, Lesley Jones and Susan Pugh. Other informants identified were the two playgroup supervisors and the other 7 staff involved in the day to day running of the playgroup. The main ‘liminal informants’ [17] identified were the Oldham Council Sure Start advisor and the parents of the children attending the various sessions.

#### 3.6.1 Interactive Research

An interactive approach to research [17, section 3] was developed and carried out, consisting of a structured interview with the managers, an activity walk through, then finally observation of and participation in the working practices during typical sessions of the Before and After School and the Playgroup. All research was performed according to the scope and focus above.



On the 9<sup>th</sup> November 2004 a meeting was held with the managers of Greenacres with the following agenda:

1. **Interview** – This was structured into a series of questions that would give valuable information about the manager's view of their current working practices and their visions for the future. The interview was digitally recorded and the information gathered used during the analysis. The questions asked can be seen in Appendix C.
2. **Activity Walk Through** – This consisted of a discussion over the different actions and events that occur throughout a day, from 7:30 when the business opens until its close at 17:30. It was explained to the managers that any extraordinary activities should also be mentioned during the walkthrough, There were a number of generic prompts that were used by the developer to try to get the most out of the walkthrough; these have been shown in Appendix C.
3. **Observation of and Participation in an After School Session at the Setting** – The processes involved in conducting the after school session the were observed using ethnographic techniques such as scripting, taking audio and video clips and taking pictures of notice boards and displays used by the organisation. I also participated in taking a register of the children and during the pick-up of the children from school.

On the 10<sup>th</sup> Nov 2004 further observation and participation was carried out using the ethnography techniques described above, this time during a Before School Session and a Playgroup Session. In the sessions I participated again in taking registers, and update emergency contact cards for children attending the setting.

### 3.6.2 Analysis of Data Gathered

A thorough analysis was performed of the data gathered over the two days. The aim of the analysis is to decompose the current situation into firstly the processes that occur, the documents used and people involved in each process, and identify the information sharing and intangible information within each process. Splitting the current working practices into processes seemed the most appropriate split as the interview was focused on identifying processes and working practices, and the observation and scripts taken at the setting showed clear repeated patterns of these processes.

The further split into the documents, people, information sharing and intangible information at each process seemed to produce the clearest picture of what actually occurs during each process. It was deemed that any IT system produced will inevitably focus on capturing and storing information and the production of information to share with others, and so the particular focus of the analysis on these areas was further enforced.

There are a number of ways in which the initial data gathered could be used and manipulated to produce this clear analysis of the problem and derive main outcomes described in 3.6.3. The method used by the

developer was to aggregate the scripts, audio, visual and picture sources gathered into one main data document that could then be analysed. The handwritten scripts were firstly typed up into the document. The audio clips taken were listened to and transcribed into the document. During the transcription of the audio mention of processes, documents and people were particularly listened for and fully transcribed, whereas other items were just listed or mentioned briefly during the transcription.

The video clips taken were watched and compared to the scripts taken during the time at the setting to check if there was anything in the video clip that had not been picked up during scripting. Overall the use of video did not yield as much information as was expected, as the scripting already covered much of the information gathered from the video, and also because of the noisy and busy atmosphere of the setting, it was sometimes difficult to see or hear any important activities that were happening.

The pictures taken were predominantly of the documents used by the organisation to convey the nature of the information stored within these documents. The information gathered from these pictures was particularly useful for the definition of artefacts and conveying information about documents, especially since samples of documents used were not available for the developer to take away. This information was also added into the main data document to produce a full set of data extracted from all sources.

Once this main document had been produced, it was read through once and each piece of data marked as to whether it was information relating to a process, a document, or a person. Other information obtained, such as suggested requirements of the managers or concerns of the staff, were also marked to identify them as other pieces of useful information that may be used elsewhere in the analysis.

To ensure that each piece of information within the document had been considered and incorporated in some way into the analysis, once each piece of information was documented, it was highlighted to show that it has been added. The documentation of the analysis was considered complete once each piece of information was highlighted in the main data document.

### **3.6.3 Main Outcomes of Analysis**

The main outcomes of the analysis conducted are summarised in the bullet points below. For a full set of the analysis documentation produced please refer to Appendix D.

- ***Main Processes Identified***
  - Registering Children (1.1, 1.3, 1.2)
  - Enrolling Children (1.4)
  - Filing and Recording Processes (2.1, 2.2, 2.3, 2.4, 2.5, 2.7)
  - Preparation of Registers (1.7, 1.8)
  - Processing Payments and producing accounts (3.1, 3.2, 3.3, 3.4, 3.5)
  - Handling of Early Education Places/grants (3.6)
  - Giving notices and letters to parents (1.9, 1.10)
  - Updating emergency contact cards (1.6)

- ***Main Documents Identified***
  - Daily and Weekly changes Book
  - Contract Documents
  - Registers and School Tickets
  - Record Books for Accident, Incident, Medical, Fire and Tuck
  - Payments Book, Letters and Receipts for parents
  - Staff and Visitor Sign In books
  - Learning Goal planning lists for the Playgroup
- ***Main People Identified***
  - Individuals – Manager, Supervisor, Accountant
  - Groups – Staff Members
  - Society – Parents, Visitors
  - Organisations – Ofsted, Oldham Council (Sure Start Oldham)

Other information and processes that were noted during the analysis of the data but were not included in the final analysis report were the suggested requirements made by managers, the concerns of the managers and some of the staff, the process of advertising and the process of providing policy documentation. This information was not discarded however; it was used to formulate the think bubbles and concerns depicted in the rich picture of the current situation, which can be found in Appendix E.

#### **3.6.4 Feedback on Analysis**

Following the analysis of the current situation, feedback on this analysis was sought to gain approval that all aspects of the current situation had been noted and that the analysis provides an accurate picture of the problem so the feasibility study can progress. This also posed as an opportunity to gain clarification of any points that arose during the write up of the analysis. A meeting was held on the 19<sup>th</sup> November 2004 for this purpose.

A number of feedback techniques were used during the feedback session, firstly to better outline to the managers the high level view of their current situation and then to gradually drill down to identifying and clarifying the finer details of the analysis.

The documents taken to the session include the full documented analysis (Appendix D), a rich picture of the current situation (Appendix E), and a flow diagram of the business processes (Appendix F).

The following meeting structure was set for the session:

- Introduce the analysis and provide a high level view of the situation as seen by the ethnographer. Through the use of the rich picture. Explain that the rich picture incorporates some of the concerns and suggestions made by staff and managers.

- Discuss the flow diagram, which identifies the processes were seen as daily activities and their flow throughout the day, the processes that are strictly done by the managers and those processes involving records and the filing system. Explain that it was ascertained that the filing and manager processes may happen at any time within its specified timeframe whereas almost all of the daily processes are guaranteed to be undertaken every day.
- Use the flow diagram to highlight a process then go through the exact details of the process and its related documents and people that have been described in the full analysis report.
- Allow any clarifications or any new information to be added by the managers if necessary.
- Gain approval of the feedback so may move towards construction of a feasibility report.

### 3.6.5 Outcomes of Feedback

This rich picture was well received by the managers and they were in agreement of the problem areas identified. It provided a good starting point to further discussion about particular areas and processes of interest. The process flow diagram was also well received by the managers, and they were in agreement with the depiction of how the processes fitted together and the headings they come under.

Justification for conducting this feedback session has been provided not only by receiving the approval of the managers but by the fact that additional process and documentation clarification was provided during this meeting that would have an impact on the derivation of a solution, including:

- **Free milk for playgroups-** The managers currently do not participate in this Government scheme and so documentation of this is irrelevant.
- **Early Education Places-** It was originally thought that parents were still asked to pay fees if their child was on a free place and that the fees were refunded to them when it was collected by managers. Clarification on this was sought and found that the parents are not charged any fees at all, the organisation just receives money to compensate for fees lost every quarter.
- **Special needs children-** There are no children with known special needs currently attending any of the sessions and so the managers considered it unnecessary to document how these children are cared for and recorded about.
- **The documentation for enrolling children-** The developer was unclear about the nature of and information contained within the contract, and so the managers were able to provide a full sample contract for the developer to analyse and document.

## **Chapter 4: Recommendation and Specification**

### **4.1 Introduction**

The construction of a feasibility report will allow the specifications for a solution and a recommendation for the managers to be formulated. In this chapter the techniques of conducting a feasibility study and the format of the feasibility report is first discussed. The construction of the feasibility report and the steps taken to do so are then described. The presentation of the report to the managers and feedback obtained on how to best proceed developing a prototype and an agreement of the specifications concludes this chapter.

### **4.2 Feasibility Study Techniques**

A number of resources have been consulted to determine an appropriate method for conducting a feasibility study. All the resources conclude that a feasibility report is important to assess both the economic and technical benefits and costs of implementing a particular system or a number of systems. Matson [9], the Washington State [10], and Avgerou and Cornford [2c] all highlight that the feasibility study should be conducted after the project aims and objectives have been identified, and that it will highlight the different possibilities for a system that have been designed or researched into. The aim of the feasibility report is to assess the costs and benefits of any ideas generated. It is a decision-making tool, aggregating all the relevant information on a proposed solution and the current situation so managers may make an informed decision. Matson [9] states that a feasibility study should be conducted on “real-world projects” with real problems and situations; therefore it is appropriate for one to be done within the scope of this project. The term ‘feasibility study’ not only includes producing specifications and recommendations, but includes the initial analysis of the current situation and research into existing solutions to allow formulation of these recommendations.

In reference to the format and information contained within a study, there is a general consensus between the resources that organisational, legal social, technological and financial issues need to be included, however each resource provides different guidance on how to write these issues into a report. Matson [9] discusses that variations in the presentation of issues will depend upon the critical factors of that project and the method chosen to conduct the study. More emphasis may be placed on particular areas of the study depending on the needs and requirements of the recipients, i.e. the managers.

Three formats have been found when it comes to writing the actual report that identify what information needs to be gathered and what other steps need to be taken to support the decision-making needs of the managers and contribute to the overall project [11, 12, 13]. The feasibility report format shown in [11] was found to be the most relevant for this project, as it first documents the project definition and problem statement that will be found out during analysis in section 3.6, and develops a project

specification for an ideal systems' solution. It considers the background to the problem, as described in section 3.2- 3.4 and then looks into the development of possible solutions. The evaluation of the solutions, the recommendation and a schedule of the future remaining activities are then documented for the managers to consider. This report will be modified to include an evaluation and acknowledgement of existing alternative systems available. The resulting report should then enable the managers to fully grasp the nature of the problem and to choose a solution that best meets their needs. This report will also prove valuable to the systems' design and to establishing criteria for the system to be evaluated against.

### 4.3 Construction of Feasibility Report

Once analysis has been completed, a number of steps remain for the completion of the feasibility study; assessment of the requirements and specification for an ideal solution; identification of the existing alternatives; generation of possible solutions; assessment of the feasibility of these solutions; provision of a recommendation. A feasibility report was constructed to formally complete these steps and hence conclude the study. Appendix G shows sections of the full feasibility report produced. The full feasibility report was not included as it contains some information already been included in this report, such as the rich picture (Appendix E) and the specifications for the ideal solution (see section 4.5).

#### 4.3.1 Assessment of the Requirements

Assessment of the requirements for an IT solution involves identifying the particular problems within the current situation. The problems within the processes and documents and the problems identified by the managers were identified and the implications of those problems noted. This identification of problems then allows the specifications for a solution to be devised. In summary of the full requirements assessment that can be seen in Appendix G, the main problems and their implications are:

- **Time and manpower for updating documents-** reduces staff available to actually look after children, documents have to be updated in personal time.
- **Two different payment processes-** confusion for parents and managers as to what has been paid/received, disputes over payments made.
- **School tickets and registers sometimes do not correlate and preparation is time consuming-** documents become unreliable, data has to be updated on multiple documents
- **No formal rules for signing in/out of staff and visitors-** staff disputes over pay (as this is calculated from when they sign in/out), regulation and safety breach.
- **Planning early learning goals is time consuming and complicated-** playgroup children may not be receiving the maximum education available
- **Problems filing documents effectively for five years-** Filing disorganised, upon inspection it may be difficult to produce documents from the filing system

- **Information duplicated**- the same information repeated in multiple documents, that then may require updating in these documents
- **Poor quality documents**- documents are illegible and do not look professional
- **No backup of documents in the event of fire/burglary**- all records will be lost, business would be unable to continue
- **Uncertainty regarding who is picking up children and school ticket reliability**- tickets not updated with verbal communications received throughout the day, staff have to ask for the children at school or may not pick up a child
- **Trust issues with accountant**- accounts are incorrect and not produced according to legislation
- **Filing system is disorganised**- affects the whole smooth running of the business
- **Staff availability**- child:staff ratios may not be upheld, managers have to cover on short notice reducing the time they have for producing documents/running the overall business
- **Intangible information lost**- information lost and not updated resulting in confusion reduced quality of service

The general requirements therefore are for a system that will allow the business to be run smoothly, reduce the time and manpower required to record and produce information therefore increasing the quality of care provided to children, and a system that will allow information to be updated quickly and at short notice.

#### 4.3.2 Specification for an Ideal Solution

Following the identification of the requirements, a specification of the functionalities of an ideal solution may be drawn up. The specifications were grouped into the following more general headings:

1. **Initial Information** – the solution should be able to store all initial information that largely remains unchanged, such as the session timings and price, and the learning goals.
2. **Enrolment (Staff and Child)** – the solution should allow children and staff to be enrolled into the business and the relevant details stored about them.
3. **Recording Information** – the solution should allow all required information to be stored about particular events, such as accidents or when children attend sessions.
4. **Timetabling Information** – the solution should allow times to be associated to particular events and documents so events occurring on a particular date may be displayed
5. **Producing Information** – the solution should allow documents requiring signatures or hard copies of other documents to be produced as required.
6. **Financial Processing** – All the financial transactions such as fee and tuck payments should be integrated into one accounting system that allows records of accounts and receipts to be displayed and printed.

7. **Non- Functional Specifications-** consideration of the security of the system and the usability and timeliness of the system should be made

The full specifications list produced and included in the feasibility report may be viewed in Appendix. J. In this appendix additional specifications made by managers have also been listed. These specifications are discussed further in section 4.5.

### 4.3.3 Identification of the Existing Alternatives

It is important to identify and assess the existing alternatives that are available to purchase and the functionalities that they provide. This identification proved useful in providing ideas for the generation of the developer's possible solutions and in assessing how the working practices of day care providers are currently addressed using generic IT packages. Five existing alternatives and their functionalities were described in the full report, and are summarised below:

#### 1. ABC Software

- Developed in Microsoft Access by RW Communications Ltd, a medium-sized UK based company
- Functionalities include:
  - Storing contact information
  - Enhanced find facility searching on a number of criteria
  - Storing child details
  - Timetabling events
  - Producing over 15 different reports
  - System security – Password protected
  - Invoicing system – Generating weekly invoices and statements

#### 3. Oak Tree Nursery Manager

- Developed by ActiveCode Ltd in the UK.
- Functionalities include:
  - Storing child details
  - Storing adult details
  - Produce a variety of documentation
  - Calculate Milk Claim

Advanced encryption and security, blocking out data according to the level of access of the user.

#### 2. Kindersoft

- Produced by Showcase Computer Systems in the UK.
- Claims made include:
  - Automate management of nursery
  - Store all child/parent details
  - Manage bookings and waiting lists
  - Provide different types of registers
  - Automate invoicing procedure
  - Diarise birthdays, new arrivals etc
  - Provide Staff management
  - Help your nursery meet OFSTED requirements

#### 4. Orgamation – iCare

- Based on Orgamation's DCMS 9003 which allows full user configuration
- Functionalities include:
  - Multiple databases for storing information
  - Registration functions
  - Accounting functions
  - Mealtime planning



## **5. ProCare Child Care Centre Management Software**

- Used by 12,000 care providers worldwide
- Has modular format allowing you to choose functionalities as required
- Modules include:
  - Family Data and Accounting
  - Employee Data
  - Day Care Accounting Software

### **4.3.4 Generation of the Possible Solutions**

Before the generation of possible solutions was conducted, the following assumptions were documented to provide the scope for the possible solutions:

- The maximum amount the managers are willing to spend on the project is £400
- The managers have access to a desktop PC
- The managers are willing to learn how to use the solution and their computer effectively
- The managers would take up the offer of free milk if they could find the time to do the paperwork
- The managers are willing to change some of the business processes if necessary to adopt the proposed new system

The different solutions generated took into account the different existing solutions available as well as the specifics of the business problems and the assumptions made. The solutions suggested were a Microsoft Access Database, a Microsoft SQL Server Database, a Web-based solution, a Spreadsheet Based Solution and an Access Database with Spreadsheet Modules. The full description of these possible solutions in terms of the software and hardware capabilities is available in Appendix G.

### **4.3.5 Feasibility Assessment of these Solutions**

The feasibility of the generated solutions was assessed in terms of their technical, economic legal, organisational and social implications. This resulted in the acceptance of two of the five solutions generated: the Microsoft Access Database and the Access Database with spreadsheet modules. Further information on this assessment is available in the notes to the presentation in Appendix I.

The solutions accepted as a result of this assessment were then considered in terms of their cost and time estimates, they key tasks that need to be accomplished and their ability to meet the specifications of the ideal solution.

Summarised below is this assessment of the feasible solutions which can be fully viewed in Appendix I:

### 1. Microsoft Access Database

<b>Cost Estimate:</b>	Backup costs; £20.00 – 60.00 Printing costs: ongoing ink cartridge costs: @£15.00 per month	
<b>Time Estimate:</b>	4 weeks to complete	
<b>Key Tasks:</b>	<ul style="list-style-type: none"> <li>• Develop a full design specification</li> <li>• Fill application with data</li> <li>• Hand over and train end users</li> </ul>	<ul style="list-style-type: none"> <li>• Make ‘the bones’ of the application</li> <li>• Test application</li> <li>• Feedback and modification</li> </ul>
<b>Ability to Meet Specifications:</b>	<ul style="list-style-type: none"> <li>• All specifications met using queries, tables and reports.</li> </ul>	

### 2. Access Database with Spreadsheet Modules

<b>Cost Estimate:</b>	If purchasing PDA, @£300 Backup costs; £20.00 – 60.00 Printing costs: ongoing ink cartridge costs: @£15.00 per month	
<b>Time Estimate:</b>	6 weeks to complete	
<b>Key Tasks:</b>	<ul style="list-style-type: none"> <li>• Develop a full design specification</li> <li>• Make ‘the bones’ of the application</li> <li>• Test application</li> </ul>	<ul style="list-style-type: none"> <li>• Purchase hardware if necessary</li> <li>• Fill application with data</li> <li>• Hand over and train end users</li> <li>• Feedback and modification</li> </ul>
<b>Ability to Meet Specifications:</b>	<ul style="list-style-type: none"> <li>• All specifications met using queries tables forms and reports of access and tabular nature of spreadsheets, and the ability for Excel Spreadsheets to be exported to and manipulated using a PDA</li> </ul>	

### 4.3.6 Provision of a Recommendation

A solution was recommended to conclude the report and the major concerns and milestones in providing this recommendation given. The recommendation was made based on its ability to meet the specifications of the ideal solution, the technical capabilities of the users, the assumptions made, the costs associated to the solution and the timescale remaining for the project. The recommendation made to conclude the report was the implementation of the Microsoft Access Database only as the development of any spreadsheet modules would be outside the feasible timescale for the implementation of a prototype.

#### **4.4 Feasibility Report Presentation of Options and Recommendations**

A presentation of the options and recommendations was given to the managers on the 11<sup>th</sup> February 2005. This presentation is mainly a summary of the feasibility report that was constructed, aiming to deliver the points of the feasibility report to the managers who may not understand the technicalities discussed in the report, and also do not have the time to read the full feasibility report. The presentation slides and the handout that was given out at the presentation may be seen in Appendix H and Appendix I respectively. The presentation was well received by the managers and after some of the finer points were discussed it was agreed that for the next meeting the managers should consider the proposed solutions and choose one that would best suit their needs. It was also decided that the specifications for the ideal solution detailed in the presentation handout should be prioritised so the developer has a clear idea of which specifications to implement first for the prototype, as it was unlikely that time would allow for all the specifications to be implemented successfully.

#### **4.5 Agreed System Specifications**

Some weeks after the presentation had been given, a meeting was held with the following purpose:

- To gather feedback on the feasibility report and presentation given
- To obtain confirmation and approval to implement the recommended solution
- To discuss any further questions that have arisen from the presentation
- To discuss the system specification and the ranking of requirements
- To draw up a UML class diagram of the proposed system and its information needs
- To show the intended interface design for some of the system forms and menus

The system specification prioritising may be seen in Appendix J. The UML class diagram and the feedback on the interface design are discussed in Chapter 4.

In summary, it was agreed that the most important areas to focus on implementing were the recording and storing of information, the production of registers, and the dealing with payments.

## Chapter 5: System Design

### 5.1 Introduction

The design of the system is an important stage in prototype development as the layout, user interface and requirements of the system can fully constructed before the technical implementation is begun. The design stage is intended to make the implementation of the system as easy as possible.

In this chapter, the design for the full ideal systems solution is developed. First, the techniques used to design the system are considered. The system's interface and structure is then designed, with particular consideration for the limited technical knowledge of the users. The overall systems' design constructed through a UML workshop with the users is then described. Translation of the UML diagram into a database design and an E-R diagram of the system concludes this chapter.

### 5.2 Design Techniques and Structure

Following the user centred approach, it was concluded that user participation in the design of the system plays a key role to producing an effective design that would suit the needs and the level of technical knowledge of the users. As a result, it was decided that users would participate by organising a design workshop that would allow participation in all aspects of design. As highlighted by Enid Mumford and the ETHICS methodology [4] the amount and nature of the user's contribution must be decided before the workshop takes place. The workshop was therefore structured into a series of steps that would be followed to ensure user participation in the design.

The workshop structure was as follows:

- **Discuss Design (Duration: 2- 3 hours)**
  - Discuss the importance of storing the underlying information first before using it.
  - Introduce the concept of a UML class diagram.
  - Use post-its to identify each of the items relevant to the business e.g. Child, Adult, Register, Accounts, Transaction in a logical manner.
  - Think about what needs to be stored and done with each item.
- **Interface and Structure (Duration: 1 hour)**
  - Show samples of the interfaces that will be used for the system.
  - Highlight usability as the key factor in the design of a solution.

The 'Discuss Design' section of the workshop aims to gather the most contribution from the users through the use of UML. As UML does have some guidelines to the construction of diagrams that the users will not be familiar with, UML was introduced to the users by describing that everything that is done within the business can be broken up into significant parts that allow work to be done. An analogy of a riding a bicycle was used by saying that, if you did not identify the wheels of a bicycle as being part of riding a bike, you would not be able to ride it; similarly, if you did not have a person to ride the

bicycle, then conclusively the bicycle cannot be described as being ridden; and finally if you did not have the action of riding, by the person using their feet to push the pedals, you are also not describing the full action. From this analogy it was highlighted to the managers that to describe the processes and work practices, you must identify everything that is involved which includes objects (the wheel), people (the rider), and actions (pedalling). This is the purpose of the class diagram; to identify all the objects that describe the working practices and determine how they are linked or used with each other. Schaum's Outline of UML [21] was also used to show an example of a completed class diagram to the users.

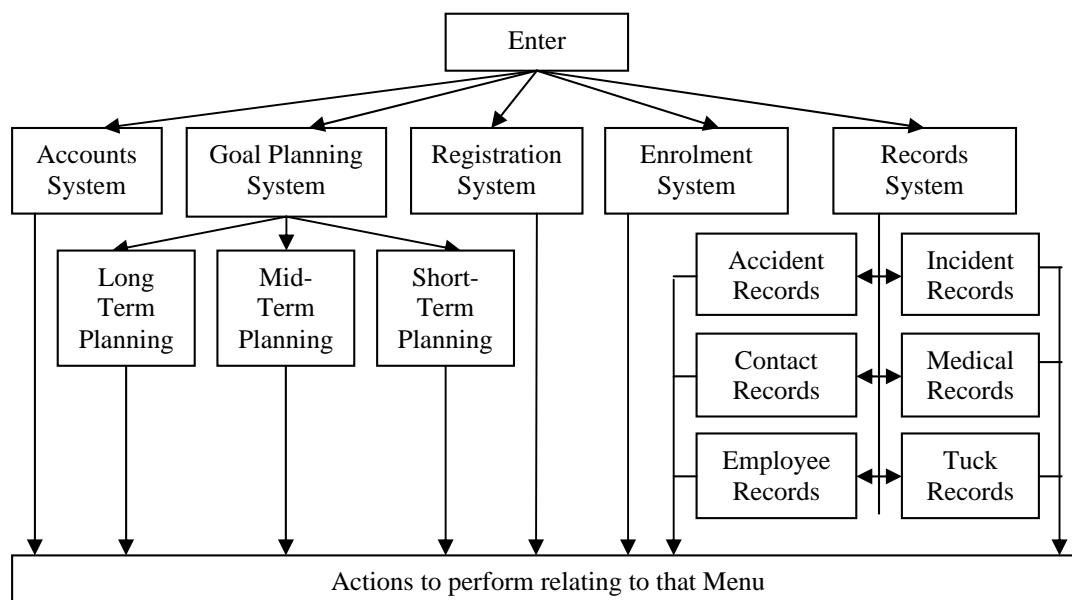
The users also participated, to a lesser extent than in the class diagram, in determining the system interface and structure. Before the workshop, sample interfaces had already been constructed and the terminology of the system thought about to best suit the level of knowledge of the users. These were then discussed with the users and alterations made as necessary.

### 5.3 System Interface and Structure

The appearance and layout of the system is important and should be user-friendly and non-technical. Example screen shots of the intended layout of forms and menus are shown below. The importance of the professionalism of documents is explained. It is also important that the system be easy to navigate and understand and so the menu structure and example help tips have also been explained.

#### 5.3.1 Menus and Forms

The menu structure is depicted in Fig. 5.3.1.1. This menu structure has been designed to logically split the different functions into drill down menus with limited complexity, so users may reach the action they wish to perform in the maximum of three clicks.



*Fig. 5.3.1.2 – Menu Structure*

The generalised layout of the menus has been described in Fig. 5.3.1.2. It is important to standardise the menus in terms of headings, buttons etc. so that users can recognise these different aspects easily through using the system without guidance from any documentation.

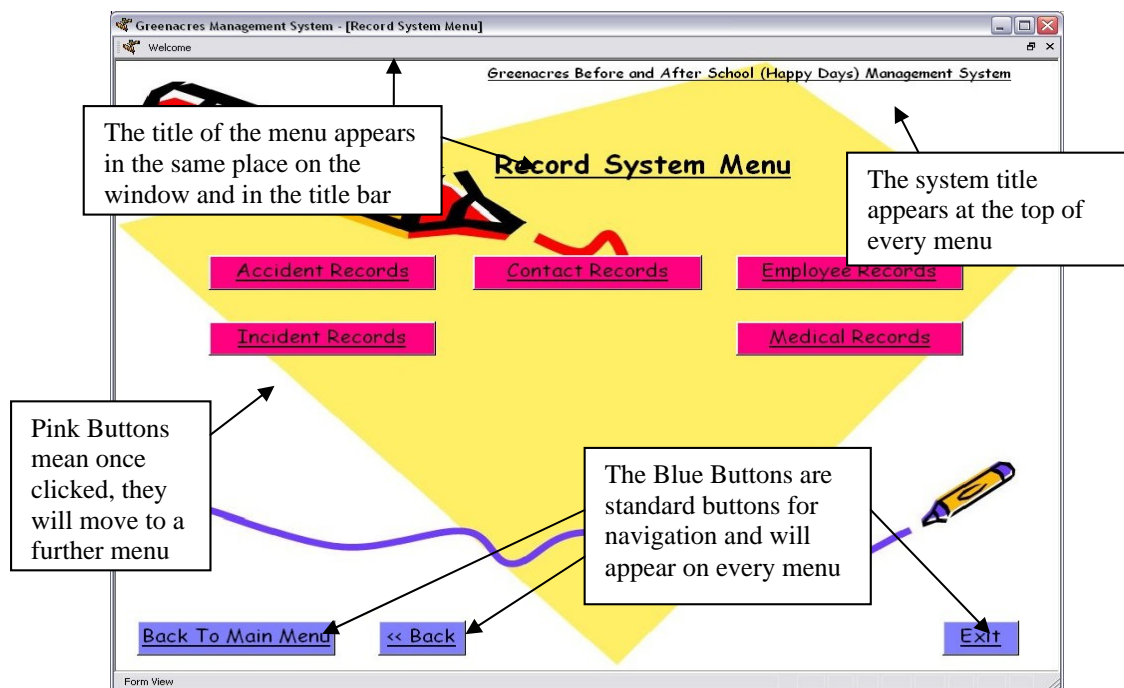


Fig. 5.3.1.2– Menu Layout

The generalised layout of forms is described in Fig. 5.3.1.3. Again it is important to generalise some features, for example having standard navigation buttons in the same place on each screen and using the same format for headings, labels etc.

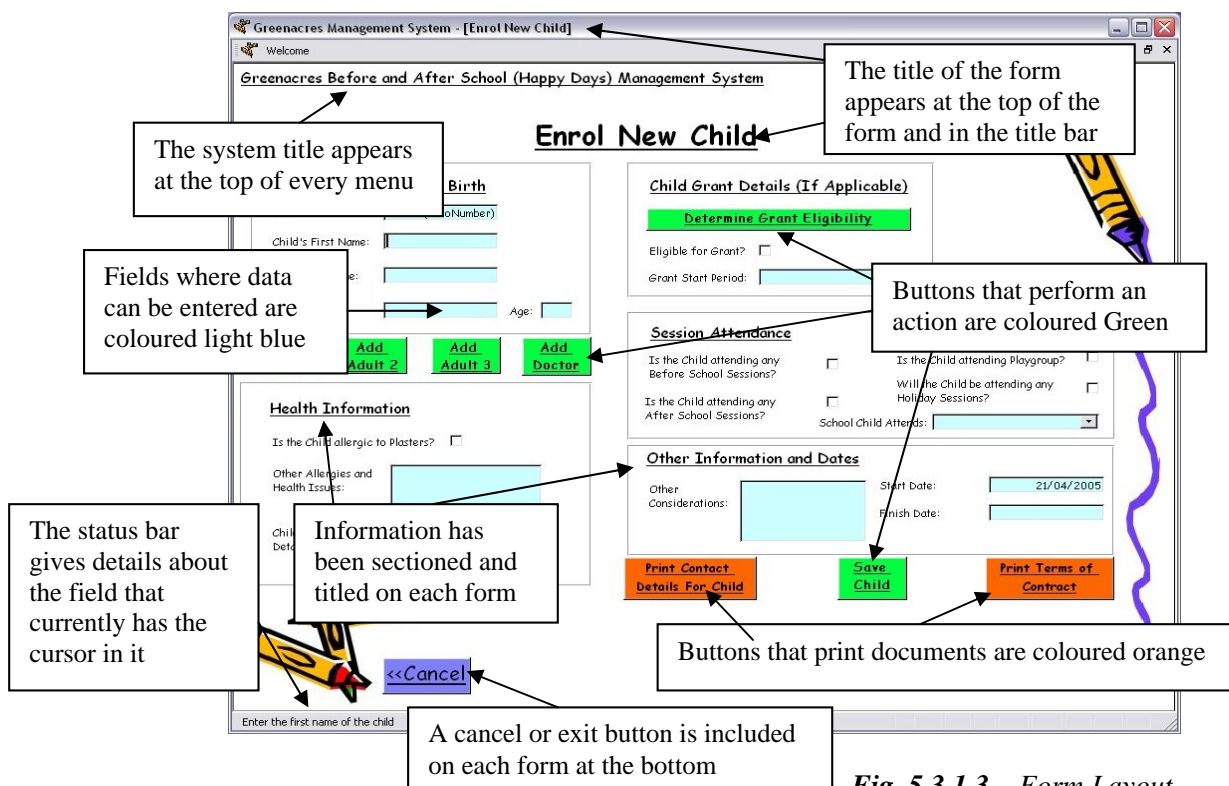


Fig. 5.3.1.3 – Form Layout

### **5.3.2 Documents**

There are some documents that still need to be on paper, as they require signatures or need to be given to individuals to take away from the setting. This includes accident records, enrolment contracts and grant information. These documents need to look professional and be standardised so both staff and parents are familiar with them and get the most out of the information contained within them. Documentation is a great concern of the business as they want to look professional and need to be able to read and understand the information contained within it. It is important that any documentation to be printed out is clear and concise and all the information can be read and reviewed clearly.

### **5.3.3 Help Information**

To increase the usability of the system, the inclusion of help boxes help text has been considered necessary. This will also aid the users in becoming familiar with the system and decrease reliance on supporting documentation. The actual implementation of help texts will be discussed in chapter 6, the main importance of any help information is that is distinguishable from any other text and that it is available for the majority of items where their full meaning may not be immediately apparent. It must also be apparent to the users how they can find out extra information about particular items within the system, and so standardisation of the help information is necessary.

## **5.4 Overall System Design**

Using UML as described in 5.2 enabled the designer to gather technical information quickly and effectively in a user-friendly and easily understandable manner, as the technique is mainly pictorial and was easy to explain to the managers who had no prior knowledge of these techniques. Using this technique also provided a focus to the design construction and so side-tracking from its completion was minimal. The class diagram produced is shown in Appendix K. From the class diagram, it can be seen that the system may be split up into sections, each with particular functions, which ultimately relate back to the child, adult and staff objects at the core.

The class diagram below has already been split to show one important and complex aspect of the business, the fees and payments (accounting) aspect. Other main aspects of the business and their associated objects have also been ringed and labelled.

As it can be seen, splitting into these elements provides a logical setting for the menu structure, and this is how the menu structure in section 5.3.1 (Fig. 5.3.1.2) has been devised.

This UML class diagram has been translated into relations, relation attributes and the operations that would be conducted on the tables to form a more database oriented structure.

## 5.5 Database Design

The relations necessary for the creation of an ideal solution and the relationships between are identified in the E-R diagram below. The natural separation of information into classes during the UML workshop and the work to convert the classes into relations for the diagram means that these relations have been normalised to minimise data redundancy and duplication, which is important during relational database design. The cardinality and participation of the relationships has also been modelled. Further information on the relations that were implemented for the prototype and their attributes can be seen in Appendix L and are discussed in section 6.3.1 of Chapter 6.

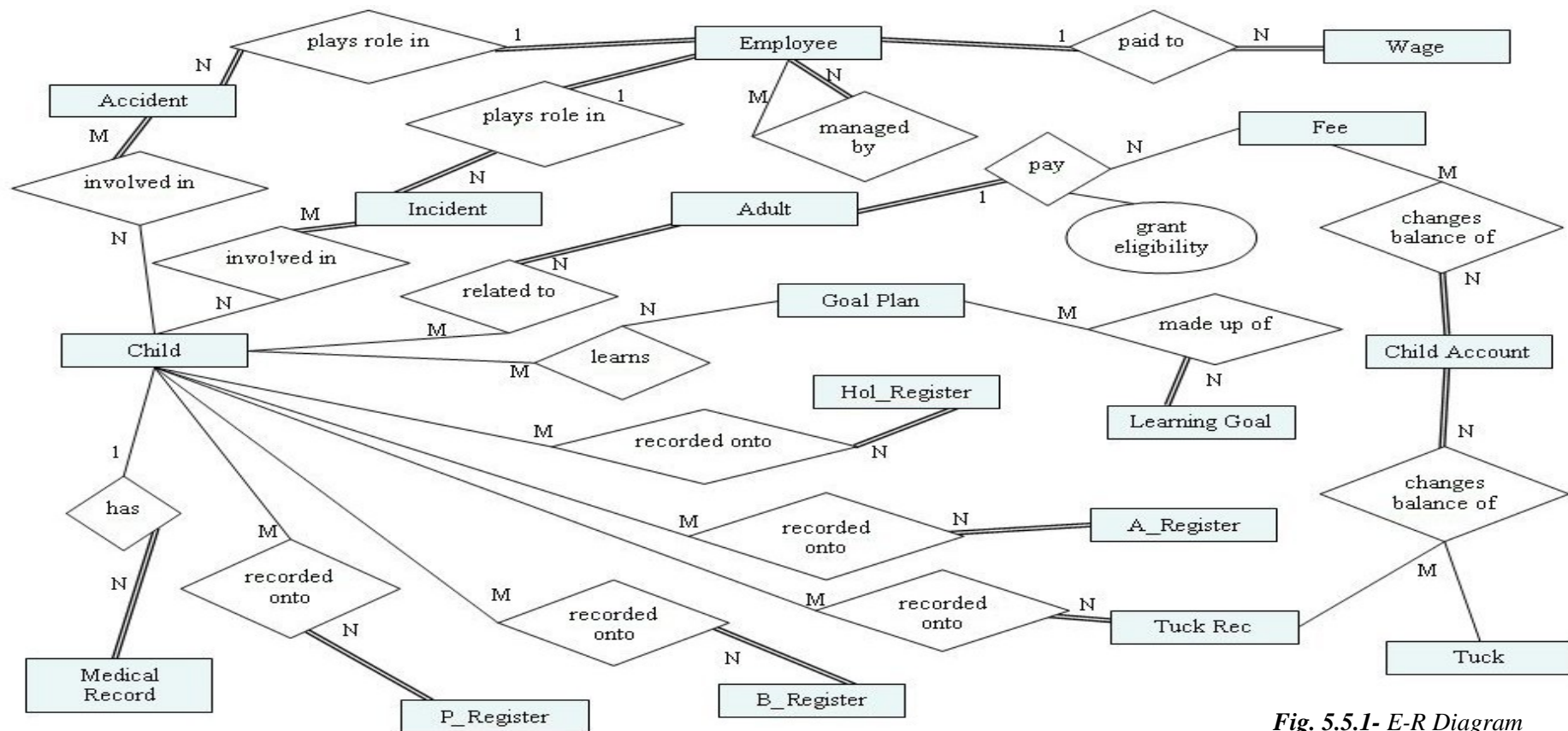


Fig. 5.5.1- E-R Diagram



## **Chapter 6: Prototype Implementation and Testing**

### **6.1 Introduction**

This chapter describes the implementation of the prototype and the initial testing carried out by the designer. First the technical platform for the prototype is discussed and justified. The implementation of the prototype is then described, sectioned into the main functional areas of the technical platform. The functionality of the prototype is discussed, identifying the areas of limitation and why the prototype cannot model the whole ideal system solution. The chapter concludes with a summary of the developer's test plan and results as well as a discussion on the need for end user testing.

### **6.2 Technical Platform**

The software intended to be used for the system creation is Microsoft Access. This is a database software application and so the base of the system upon which the rest of the system specifications will be built will be formed using tables. Data entry and data viewing has been done using the software's 'Forms' function. Production of physical printouts has been done using the software's 'Reports' function. The underlying programming language for Access is Microsoft Visual Basic. This language has been used to modify the generic features available for forms and reports to customise the prototype and implement the more advanced functions of the prototype.

Justification for using this technical platform was that the users have this software on their computer and so it comes at no extra cost and that this software is easy to use and contains many in built functions that will allow the prototype to be created faster and so more functionality built in. The developer is also competent at using this software and has developed databases using this software before. The alternative database application was Microsoft SQL Server, however this application is for systems that would be used on a larger scale and usually across networks, and so it was not considered appropriate. It would also be expensive to purchase for the organisation.

### **6.3 Implementation of Design**

#### **6.3.1 Table Implementation**

The relations that were implemented from the E-R Diagram of the ideal solution are those seen in Appendix L. In Access, implementation of these relations into tables is made simple by using the tool for creating tables. For each table, the names of the attributes were entered into the 'Field Name' column and the data type specified in the second column. Entering a description of the attribute into the 'Description' column aids in making the system more user friendly as this description will appear in the status bar at the bottom of the window when this field is. The constraints applied to each attribute are entered by selecting the attribute and using the options available in the 'General' tab.

### **6.3.2 Forms Implementation**

The operations identified during the construction of the UML diagram can be translated into the menus necessary and forms that will be used in the system. The menu structure is explained in section 5.3.1, forms have been used in their most basic application to create the various menus detailed.

Forms can also be used to capture information to be stored in the system and to display information on screen without allowing it to be edited. Following the ranking of the specifications, the system should firstly provide features relating to the storage and display of information.

The forms created to achieve these specifications have been shown in Appendix L.

The forms that begin with the word 'Main' denote the Menu forms created. The forms beginning with 'Page' are either display or addition forms that retrieve from or add information to underlying tables. A number of 'PageDisplayChild' forms have been created. This is because these forms are displayed as a result of clicking a button on another form once a piece of information has been added to this form, for example, the 'PageDisplayChild1AccRec' form will find the child details (DisplayChild) for the child that is named as the first child involved in an accident that is currently being recorded (1AccRec).

The 'MainTemp' and 'PagesTemp' forms are templates upon which the creation of the menus and forms were based, to achieve some basic standardisation of the menus and forms created.

For the forms where new data is added to the database, the forms are linked directly to the underlying tables. For the display and modification (Mod) forms, the forms are linked to queries that retrieve data from the underlying tables based on the information entered in the parameter prompts invoked when the query is run. If the data in the underlying tables matches the criteria specified, the information is returned in the form, otherwise a message box appears with the message 'No Records Found'. When more than one record is returned, the modify and display forms have a display telling the users how many records were found and navigation buttons allowing them to move through the records. The queries and navigation features are further discussed in sections 6.3.4 and 6.3.5.

### **6.3.3 Reports Implementation**

It has been identified that there are still some documents that must be created and printed out to obtain the signatures of the parents and staff. Of the functionalities that have been implemented, there are four main documents that require printing to obtain signatures. These are the contract and the accident, incident and medical records. School lists also need printing as they will be given to staff so they may check the children they are taking to and picking up from school. Due to time constraints, the registers must also be printed out and filled in by hand each week instead of being filled in through a form of the system. These registers will be populated by the names of the children; they just then need to be used as they would use their previous registers and lists. The limitations of the school lists and registers are discussed further in section 6.4. The reports that have been created are shown in Appendix L

Some of the reports are repeats of others in that they convey the same information, but that information has been derived from a different source. This particularly applies to the accident and incident reports. For accidents and incidents, child details may be displayed for up to two children once they have been selected from the relevant 'Child Involved' fields. Once the details are displayed, they may be printed out, and hence a report is needed for this information, the shorthand for this being 'ChildReport'. Similarly, the accident details need to be printed out for up to two children if more than one child has been specified, so that the parents of each child may sign the accident details relevant to that child.

#### **6.3.4 Queries**

To display information for either viewing or modifying, queries have been used to help the users to narrow down their searches for information. The queries work by prompting the users to enter criteria to reduce the number of records that is returned. The criterion that is used to search the majority of records and what the users will wish to search for most is the child's name. The form based on that query will then be displayed if there are records that have been found, otherwise the 'No Record Found' message box will be displayed. The queries that have been created for the prototype are shown in Appendix L

The queries will allow the users to search for children in a number of ways; by first name only; by first name and surname; or by specifying neither a first name nor surname, thereby returning all the results. There are also queries relating to children and their medication, where the child's first name, surname, and the name of the medicine will be asked for before the records (if there are any) will be returned. Again if the users do not enter any of this information and just click OK to each of the prompts, all the records of children and their medication will be returned. The users may again search by using the child's first name only but the medication must then also be entered. You may also search for just the medication name, for example if you are preparing to administer a medicine to a number of children, you could find out which children need that medicine just by typing in the medicine name.

The other queries shown in Appendix L are used for generating reports or retrieving further information when a button is pressed on another form, for example the Child1DispAccFind query is invoked when you press the 'Show Child Details' button on the 'Search for Accident Details' form.

#### **6.3.5 Visual Basic**

Visual Basic has been used to modify the forms and reports in a number of ways. There are a number of pieces of code that have been used for all forms and reports to aid in the general appearance of these objects and ensure that no foreign error messages (messages that have not been created by the developer) are displayed.

When searching for information to view or change, it is important that the users know how many records have been returned as a result of a search and are able to move through and view these records.

This is made possible through the implementation of custom navigation buttons and a Records Found field. The code for the navigation buttons has also been customised to indicate to the users using a simple message that they have either moved to the last or first record, otherwise the record displayed on screen will change. If a search results in no records being found, instead of displaying a blank form which is what Access does by default, a piece of code has been written to run when the form is about to be opened that will default to a custom message, usually 'No Records found'. The code for these operations may be seen in Appendix M.

Upon opening, all forms and reports with the exception of popup forms have had their code modified to maximise the screen upon opening. This standardises the display of forms.

Upon pressing a button to open a report ready to be printed, the code has been modified so that it displays a preview of what will be printed rather than just printing the document off automatically.

All other message boxes that appear throughout the use of the system have been created using Visual Basic code to appear after a certain action has been performed or option selected.

One particularly important piece of code that has been used is in the determining of grant eligibility. This piece of code has been implemented to handle the child's date of birth and the term start dates for a particular playgroup year to determine exactly when a child is eligible to start receiving a grant as well as deciding if they are too old or too young for playgroup. The code produced for this has been altered in the final iteration of the prototype and so is explained in section 7.4.

## **6.4 Prototype functionality and limitations**

The prototype delivered many of the functionalities agreed in the specifications pertaining to the enrolment of children and the creation and storing of records. The functionalities implemented can be summarised as:

- Storage, display, modification and printing of child details and the enrolment contract.
- Grant eligibility can be determined on a list printed of all the children and their grant eligibility as applicable.
- A number of contact details to be stored, displayed, modified and printed off as required.
- A list of emergency contacts for all the children enrolled may be printed off as needed.
- Storage, display and printing of accident, incident, and medication details as required.
- Storage, display and modification of employee details as required.
- School lists and registers with the children's names on based on the sessions the child is recorded as attending can be generated so they may be printed off and used each week.

As time was not permitting, the registers were implemented as a series of sheets that would be populated with the names of the children and just printed off each week. This has a bearing on the school lists,

which are just lists of the children that attend the before and after school and the particular school they go to, regardless of whether they have actually attended that day or not, as was the original intention.

The payment systems specifications were not included in the prototype functionality as time was not permitting.

## **6.5 Developer Testing and the need for End User Testing**

Before the prototype can be used to gather user feedback and to undergo end user testing, it must undergo testing by the developer so the user's use may go as smoothly as possible. End user testing is an important stage however, as testing by the developer will mainly be to ensure that if the prototype is used correctly everything will run smoothly, however the user's use of the prototype may return some unexpected errors from use that the developer has not foreseen. As the developer has a good knowledge of how an Access database works and how information should be entered into forms and what buttons do, the users may use the prototype in unforeseen ways and so find weaknesses and errors in the prototype.

The test plan constructed by the developer aimed to test the prototype in 4 main areas; smooth traversing and correctly display of menus and forms; correct constraints on fields of all forms; correct printing of required documents; correct function of display-only forms. A summary of the results from each of the areas is given below.

- ***Smooth Traversing and Correct Display of Forms and Reports***

The desired display of forms and reports are that they are maximised to the full size of the window when they are opened. This occurred for the majority of objects, however some reports where secondary information was needed left the windows in a 'Restored' state.

Reports should open to display a preview of what is to be printed out. All the reports opened to display the print preview page.

Forms that open as a result of clicking on a button in another form, for example the 'Show Child Details' button on the Record Accident form should open as popup windows. All the pop up windows opened as expected.

Upon closing the form by either completing an action, pressing the 'Cancel' button or pressing the 'Back' button the previous form should be displayed. Most forms were successful in this test.

Forms should take a maximum of 2 seconds to load. Due to the links that need to be retrieved initial loading of some forms did take some time, however once they had opened for the first time whilst running the system, they opened faster the second time.

- ***Correct Constraints***

As the constraints on the forms were derived either directly from their underlying tables or indirectly from the underlying query which then links to the tables, it was decided that the various constraints described in Appendix L would be tested directly from their tables using the datasheet view of Access for tables. All the constraints performed as expected when erroneous or unexpected data was entered.

- ***Correct Printing***

Each of the documents that need to be printed were checked to ensure that they were first previewed then printed correctly from using the custom menu bar for printing, and that the information contained within them matched the information displayed on the previous screen. They were also checked for general spelling errors or the cutting off of information accidentally. Most of the reports displayed information as expected, however some of the fields required extension in the event of increased information being added to particular field, such as description fields.

- ***Correct function of Display Forms***

The display forms should all be modified so that data cannot be entered or changed using these forms. There are also some fields in some add record forms that get their values from a previous forms. These fields should not be allowed to be manipulated once information has been entered into them. Most forms and fields with display-only attributes performed as expected.

All the problems found during the developer's testing were fixed before the user's were shown the prototype as described in Chapter 7.

## **Chapter 7: User Training and Manual**

### **7.1 Introduction**

For any relevant feedback to be obtained, the end users must make use of the prototype and experience its different functionalities for themselves. This chapter describes the importance of training to obtain necessary feedback and the training method used before the end users used the system for themselves. The end users' use of the prototype is then described and how this use is not only valuable for feedback but also proves invaluable as a form of testing. Upon consideration of the project schedule, it was decided that the prototype should be handed over to the managers permanently as a system in its own right, and so changes to the prototype to correct any faults found during testing and to make the prototype usable year in year out are described. Before handover of the system was achieved the importance of and formulation of user documentation aimed at an audience with limited technical knowledge is described. Finally the handover method used to handover ownership of the system is described.

### **7.2 Importance of Training and Training Method Used**

Training the users so that they may use and evaluate the prototype is an important part of the overall evaluation and testing of the prototype. It is important for the users to be able to use the prototype as they would in a work situation and to be able to use the prototype to its full capability to gather significant user feedback and identify any problems with the prototype.

The approach to training taken to allow the users to make full use of the system before giving feedback is a mixture of demonstration and application. To enable this, two computers were used, the developer's laptop and the users laptop, with the prototype being opened ready for use on both the laptops. The developer then demonstrated each of the different buttons and aspects of the system, and at each step, requested that the users do the same so they could get a 'feel' for the system. To conclude the training, the developer used role-play and the construction of scenarios for the users to practise using the prototype as they would at work.

### **7.3 Use of prototype and End User Testing**

Following user training, the users were observed for approximately an hour using the prototype, typing in existing data from their records and participating in role-play in order to test the prototype effectively. As this session also doubled up as end user testing, the developer considered the objectives of this use were to identify any anomalies or errors occurring through incorrect and unfamiliar use of the system.

## 7.4 Final Prototype Changes

Due to the permittance of time, a second iteration of the prototype was undertaken to develop the prototype into a system in itself that may be handed over to the users and used yearly by them.

There were a number of points and functionalities that needed to be considered for the final system, mainly pertaining to the time frames and size of the system:

- All the information stored has to be kept for a number of years, regardless of whether a recorded child has actually finished attending sessions or not.
- A complete set of records pertaining to one year should be stored each year as an archive.
- Children that have finished attending sessions shouldn't be found in the various searches etc. from the date that they have finished attending.
- It is important to know exactly when children have finished attending.
- You should be able to look at a full set of previous records without hindrance of the child's finish date.
- The term dates used for grant eligibility will change year on year.
- The system must stay sufficiently small so backups may be made of it.
- The system must stay small enough to reduce the waiting time for searching for records.
- The system must be fully secure.

Timeliness being the main issue, the developer consulted the notes taken during DB31 pertaining to temporal databases. It was decided that single temporal attribute, `date_fin`, would be added to the 'Child' table that could be used to implement the rest of the temporal functionalities.

The first use of this is in all the search queries, where the criterion of each search has been modified to say only retrieve records where `date_fin` is Null.

To make the system timely and keep the system small, two buttons were implemented that perform a number of underlying functions; named 'Tidy Up System' and 'Make this System an Archive'.

The 'Tidy Up System' button is intended to be pressed once at the end of each playgroup year for the system that is going to remain current; that is it is not going to be an archived system. It aims to remove old records about the children that finished in the previous year to keep the system small. Any old records can be sought in the archived system. Through the use of a series of delete queries the following records pertaining to finished children will be removed:

- All the medical records relating to a child that has finished
- All the adult records (contact details) relating to a child that has finished
- All accident/incident records where the child that has finished was the only child involved in the accident/incident
- All accident/incident records where both the children involved have finished



- The child details record relating to a child that has finished if the finish date recorded for the child is **over** 3 years old.

The records that **do not get removed from the current system** are:

- The child details record relating to a child that has finished if the finish date recorded for the child is **less than** 3 years old. This is so a list of children that have finished in a particular year may be printed so for the manager's reference.
- Any and all of the records relating to children that do not have a finish date.

A series of message boxes highlighting the importance of this feature and how it needs to be carefully used have also been implemented for this button.

It is important that the system is archived after it has been used for a playgroup year so we have an old system that holds the records for that playgroup year in it that may be filed away, just as the managers would file away all the registers for a playgroup year. Clicking on the 'Make this System an Archive' button removes all the finish dates from the children in the archived system where the finish date entered for them is within that playgroup year, for example if the archive system is called 'Greenacres Management System 2005-2006' it will remove the finish dates for all those children whose finish dates lie within the span of that playgroup year.

The update query that does this evaluates the dates entered for grant eligibility to determine the span of finish dates that it must make Null. Removing the finish dates means that all the different searches now work for the children, however it is not possible find out the date that a child finished from the archive. To find out the date that a child finished, a report has been created so the managers may print a list of children that have finished in a specified playgroup year from the current system. It has also been made possible to search the current system for the specific child to just find out their finish date, as the child details searches have not been implemented with the 'date\_fin = Null' criterion.

The problem of grant eligibility term dates and the fact that they would change each playgroup year was solved by creating a table that would store only one row consisting of the three start dates, which could be modified each year through use of a form. The code for determining grant eligibility was then modified to evaluate the dates in the table and the child's date of birth in determining the eligibility of the child.

A number of If statements are parsed before the function reaches its conclusion; check if the child is too young to attend playgroup; check if the child is too old to attend playgroup; check if eligible starting September; check if eligible starting January; check if eligible starting April; check if not eligible for free place until next year. Once the information has been determined, the grant start date or other information is displayed in a message box and then appropriate fields filled in automatically on the child enrolment form, for example ticking the playgroup session box and entering the term date.

The need for security and passwords was met by creating a password table, where the password would be stored, and two forms, one which would appear on system start-up, requiring you to enter a password, and one which would allow you to change the password once you had entered the system, which is opened by clicking on the 'Change Password' button.

## **7.5 User Documentation**

As a system is now to be handed over to the end users, it is important to provide documentation to support this system. This documentation should support the level of knowledge that the managers have of IT. From previous meetings it has been determined that the managers (users) have very little knowledge of IT and how a computer works, and so the manual should start from scratch as to how to turn the computer on, setup and install the system, how to back-up the system and provide a detailed glossary and a troubleshooting section to aid the users as much as possible, as well as explain and describe how to use all the functionalities of the system. As they are new to computers, emphasis has been placed on what the different functionalities of the system are and what they are meant to do, in some cases relating the functionality back to real-world physical objects in order to get the point across. Detailed screen shots have also been taken and provided in this manual to try and encourage and simplify the system for use by the users as much as possible. The user documentation has been handed in as a deliverable of this project rather than an Appendix as it consists of 80 pages.

## **7.6 System Handover**

The handover of the system and user manual was done through a final meeting with the playgroup managers. A CD of the system with a digital copy of the user manual as a PDF file was given to the managers along with a hard copy of the user manual. The freeware installer for Adobe Acrobat Reader was also put on this CD in case the managers did not have it on their computer and so were unable to read the PDF file.

## **Chapter 8: Evaluation of Prototype and User Manual**

### **8.1 Introduction**

In this chapter the importance of gathering feedback to assess the value of the prototype and user manual to Greenacres and the method of evaluation is discussed. Criteria for the effective evaluation of the prototype are then described. The user feedback obtained from the managers via an interview is then summarised, following their initial use of the prototype and review of the user manual. The outcome of the prototype and user manual evaluations are then summarised to verify the user feedback in regards to the interface, design and clarity of the manual (heuristic evaluation), discern whether the prototype conforms to legislation and describe whether the prototype has met the agreed specifications and the handed over system and user manual are reliable for use on a yearly basis by Greenacres.

### **8.2 Information gathering and Evaluation techniques**

The process of gathering information and feedback has been a common theme throughout this project, and comes mainly into play during the evaluation of the prototype produced for Greenacres. Jackson [22] highlights some factors that need to be considered when choosing an information gathering method in that the method used depends on the type of evaluation being performed. It is possible to adapt his teaching-oriented evaluation stages over to relate to the project stages requiring evaluation.

Particular evaluation methods highlighted that can be related to this project are Interviews, Focus Groups, Observation (or ethnography) and Confidence Ratings.

Referenced within [22] is a further resource known as the *Evaluation Cookbook* [23]. This gives further information on these evaluation and data gathering methods and also identified Checklists and Trials as further methods that could be related to the project.

Evaluative ethnography techniques have proved particularly useful in this stage of evaluation and are discussed not only in [23] but in the paper by Hughes et al. [16]. The technique used was to observe the use of the prototype by the managers at a distance to shed light on how the users actually intend to use the system. During the evaluation the developer also used the system ‘from the users perspective’ (participation) and alongside the user to gather evaluative feedback.

Confidence ratings or logs, were seen as being particularly valuable for gathering true user feedback to ascertain how competent and confident they feel about using the prototype and how confident they feel that their original problems have been identified and solved. This technique was ultimately rejected as the meeting and observation techniques provided adequate feedback.

Checklists are defined as a useful tool when it comes to end user evaluation of the project and the solution [23]. A checklist of items could be developed with the managers and then the solution measured against the checklist points to see how well the project has been matched to the original users’ needs. This technique similar to formulating evaluation criteria which is the approach taken in this project.

The description of trials in [23] is analogous to using prototyping for aiding the design and possible eventual production of a solution. It describes using stages and testing the developed product at each stage to evaluate whether the product will really be useful or 'just look nice', a common problem in systems projects.

Another evaluation technique adopted and used to formulate some of the evaluation criteria for both the prototype and user manual is usability heuristics. Jakob Nielsen [24] specifies ten general principles for interface design that have been adapted to also determine the usability of the user manual and prototype.

### 8.3 Evaluation Criteria

The choice of evaluation criteria for the prototype and user manual has been influenced by the knowledge gained in conducting the project. Some of the most natural criteria to evaluate the prototype against the legislation identified in section 3.4. Functional criteria have already been devised in the form of the specifications of the ideal solution. Finally through concern over the managers' technical ability, the usability and the clarity of the prototype and user manual have been considered by adapting usability heuristics to evaluate these two deliverables.

The legislation criteria to be used for the evaluation are as described in Chapter 3.4. The functional criteria used are the specifications of the ideal solutions as described in Appendix J.

The usability criteria intended to be used are summarised as Error Prevention; Real world Conventions; Practicability; Display of Information; Consistency and Standards; User Control, freedom and efficiency; Error Messages; Flexibility and Help Information. Full information of the measurements that these criteria take may be seen in Appendix N.

### 8.4 User Feedback

User feedback of the system was gathered as part of the evaluation process via a final interview with the managers to discuss the prototype and the user manual developed. The final interview was structured into a series of questions to provide information that could be used to determine the outcome of the evaluation process. The questions asked and a summary of the user feedback obtained are described below.

#### **1. Do you feel that your needs for storing and producing information have been well met?**

*"We found that storage and display of information is simple and easy to achieve."*

*"All the various information relating to a child can be quickly obtained which is important to us."*

*"The documents produced look professional and are easy to create, which would increase our reputation with parents."*

*"We are happy with the production of registers even though registration is not carried out in the system as it is much better than the current way of registering."*

*"We would have liked more work to be done in terms of the processing of fees."*

**2. Are you pleased with the presentation of the documents that are produced?**

*"The presentation of the documents produced is clear and professional."*

*"All the information can be read and found easily within the documents."*

**3. Are you pleased with the layout and structure of the prototype?**

*"The system is easy to move through and the different tasks to do are ordered in a clear way."*

*"The layout looks very professional and interesting makes looking at the screen a pleasure even if we are not quite sure what we are doing!"*

**4. How easy have you found it to get used to using the prototype?**

*"We particularly like the help tips and help information displayed at the bottom of the screen and when you hover over buttons. These have helped our understanding greatly."*

*"Entering information becomes quick and easy once you get the hang of clicking in the fields properly."*

*"The message boxes that are displayed when something goes wrong have helped us not to make the same mistake twice."*

**5. Are you concerned about any of the terms used within the prototype?**

*"We had reservations at first about some of the terms used until they were explained to us when we were trained to use the prototype."*

*"The provision of a glossary in the user manual has helped us get to grips with any of the unfamiliar terms."*

**6. Do you feel that there is adequate security available?**

*"There was no security in the initial prototype, however from briefly looking at the final system and the user manual the security seems sufficient, especially as we can change the passwords regularly."*

**7. Are you confident in following the steps described in the user manual? Are they explained in enough detail for you to be able to use them?**

*"The user manual seems very thorough in its description of the things that can be done with the system."*

*"Each description is thorough enough that other descriptions do not need to be read to understand what can be done with a particular button."*

*"There is not very much in the trouble shooting sections- lets hope that nothing much goes wrong!"*

**8. Do you believe that you will ultimately make use of the system that was handed over?**

*"We are looking forward very much to using the system when it comes to September."*

*“We plan to get used to the system before September by entering information about the children and staff that will still be working/attending in preparation for the September intake”*

*We may just print out empty forms of the registers now to use as they are so clear”*

The observation of the users trying out the prototype also provided indirect user feedback to determine the usability evaluation outcomes. The observation technique used was to take notes of the users as they entered information and was a strictly ‘fly on the wall’ approach where the users were not allowed to ask the developer any questions about the prototype so a true feel of how it would be used in reality could be documented. These notes were then logically read through and information extracted that answers each of the usability criteria developed in Fig. 8.3.1 above.

## **8.5 Prototype Evaluation Outcome**

There are a number of outcomes that have been derived from the evaluation of the prototype against the criteria and the data gathered from user feedback.

The outcome of the evaluation against the legislation criteria was that all the legislation had been conformed to successfully as relevant to the functionalities of the prototype. The points of the legislation were used as check points, and when the prototype showed that it was performing a particular criteria, for example, recording all the medicines administered to children (National Standard 7, 7.7) the criterion was considered justified.

The outcomes of the evaluation against the functional criteria concern only those functionalities that were developed for the prototype. The functionalities pertaining to the storage, display and production of information all had a positive evaluation outcome. The registration system functionalities however did not fully model the required specifications due to the time constraints of the system.

The overall outcome of the evaluation against the heuristic criteria, taking into account the information gathered from the user feedback is positive. Justification that the prototype had successfully prevented errors and provided help information was given by the use of help tips for all buttons and the display of field descriptions in the status bar. The display of information and consistency criteria was justified by the fact that all forms and menus were created from base templates, thereby standardising the displays, and the separation of information so users could read and enter this information a bit at a time, reducing confusion. The practicability of the prototype produced a mixed outcome in that information could be accessed quickly and easily on demand, but the prototype had not been implemented with any security. The final system however has security features to allow control of access. The prototype mixed use of real world terms with the provision of some flexibility for more advanced users and for when the end users become more advanced by making sure tab sequences were correct for moving through fields and enabling the mouse-wheel scroll function. The prototype was deemed easy to control by the user and

had freedom of navigation, although in efficiency terms some forms did take some time to load initially, and this was frustrating for the users as they thought they had done something wrong.

## 8.6 User Manual Evaluation Outcome

The user manual was evaluated in terms of the usability heuristics described in Fig. 8.3.1 and for its overall clarity. It was scanned briefly by the managers but also read by the developer's mother, who it is believed has the same level of knowledge of terms and experience of Microsoft Access as the managers. The outcomes of the evaluation feedback gathered from the two participants are as follows:

- **Real world conventions-** It was concluded that the user manual effectively used real world terms and descriptions throughout, justified by the ease of understanding of the manual, and the provision of a detailed glossary for terms that were deemed more technical and unfamiliar. The functions of the system were described in familiar terms to aid the understanding of the purpose of the functions.
- **Practicability-** The positive evaluation of the practicability of the user manual was justified in a number of ways. The user manual was provided in both paper-form and as a digital PDF file so it could be readily accessed on the computer whilst using the system if the paper documentation was unavailable. The table of contents was deemed sufficient in allowing particular functions to be looked up quickly, as it documented each of the main functions as accessed through the menu and also any main sections within these functions. The general printing guide in particular was tailored to provide guidance on any printing functions conducted.
- **Consistency and Standards-** Detailed descriptions of how to enter and manipulate certain objects, although tedious to the advanced user, were appraised as a result of the evaluation, as it allowed the documentation to achieve a balance and a constant level of knowledge throughout, so the beginning of the document needn't be read to understand how to perform the functions described in further parts of the document.
- **Help information-** It was concluded that the user manual was sufficient in providing good description of how to perform actions, and that the logical description of each function allowed help to be found once the function had been located in the manual. It was indicated however that the troubleshooting was limited in its provision of help when things go wrong.

Comments were also made in regards to the final system produced and how well the user manual reflects this system. The developer's mother commented that overall it provides a good representation of the system, however it is limited in the information and aid that is given if something unexpected occurs or the abilities for particular events to be cancelled and what this means. It was also noted that good descriptions were given of the time feature buttons and the actions they perform, as this is not fully apparent from using the system, however due to the sensitive nature of the information and the implications of pressing these buttons, the stress placed on these buttons should be enhanced.

## Chapter 9: Project Conclusion

### 9.1 Introduction

To establish whether the project was a success, the project must be evaluated to see if it achieved its original objects and minimum requirements. It is also important to consider the lessons learned and the skills achieved from conducting this project. The knowledge obtained that took the developer outside the boundaries of their degree is also described. It is important to identify the achievements made in respect to Greenacres and what was ultimately provided for the organisation. Suggestions for further work to be carried out for this project are made to conclude the project.

### 9.2 Summary of Achievements

#### 9.2.1 Minimum Requirements and Objectives

*To acquire and in-depth understanding of ethnography techniques, SSM and feasibility study.*

An understanding of these techniques was coupled with identification of the methodologies that use these techniques and the formulation of the methodology used for the project. A number of sources were consulted to gather further insight into the actual techniques rather than the methodologies to enable informed use of these techniques throughout the project.

It was also necessary to gather insights into the different types of IS development methodologies to develop the overall approach towards the project.

*Document the results of the analysis on the current working practices of the organisation and their requirements for an IT solution.*

The current working practices of the organisation and their requirements for a solution were captured through the use of interviews, walkthroughs and ethnography. The information gathered was methodically examined and fully documented through the production of an analysis report. The analysis report captured the full extent of the working practices by identifying the processes, documents, people and intangible information within the organisation. The organisation's requirements for an IT solution were depicted through the use of a rich picture and the analysis concluded by seeking the approval of the managers and updating the analysis documentation with any clarifications made.

*Produce a feasibility report into the possible solutions to the problems with the organisations' working practices and get approval on the way forward.*

The nature and purpose of the feasibility report was considered to maximise the benefits of producing the report. The report documented the problems found during the analysis and hence the



requirements for solution and the specifications of the ideal systems solutions. An appreciation for the functionalities of existing solutions and how these contribute to providing a better quality solution was achieved. A number of possible solutions were then generated and the feasibility of these solutions critically assessed. The most feasible solutions were then further developed by assessing the potential cost and time requirements, identifying the key tasks to be performed and assessing their abilities to meet the specifications for the ideal solution.

The first deliverable, a presentation of options and recommendations documented in the report, was then given to the managers of Greenacres to allow them to make an informed decision as to the way forward for the project. A summary of the presentation and the findings of the report was given in the form of a handout to allow the users to deliberate over the recommendation and the specifications of the solutions.

Approval of the recommendation was given and a set of prioritised specifications formulated by the managers so that a prototype may be developed in the order of the most important functionalities.

*Design/implement a prototype to solve the working practice problems.*

In view of the objectives, the design for the full ideal system's solution was created. This design involved user participation in the form of a UML workshop to formulate a class diagram modelling all the objects and attributes involved in the working practices of the business. The users also participated in determining the proposed system interface and structure.

A systems' prototype was developed along the incremental notion in that the functionalities were sectioned and built in full according to the prioritised specifications resulting from the feasibility study. The prototype was tested by the developer to identify and fix errors resulting from technical implementation.

The prototype was demonstrated to users and the users trained on how to use the prototype before users proceeded to manipulate the prototype themselves. Their use produced two valuable outcomes- user feedback of the system to be considered in the evaluation and end user testing for run-time errors and errors resulting from unfamiliar use of the system.

As time was permitting a third deliverable of the project was achieved which was a final system to be handed over to the users and a supporting user manual. The prototype was built upon by fixing the errors found and introducing time elements to make the system useable year on year to produce the final system. Documentation was written to directly support the set-up and use of this final system.

*Produce a summary of user feedback and an evaluation on how the created prototype provides a solution to the problems.*

A summary of user feedback was produced that was gathered from an interview following the use of the prototype and from the observation of this use, and from a final interview to discuss the end system and user manual. Evaluation criteria were set to evaluate how well the created prototype provides a solution to the problems. These criteria were derived from the childcare legislation examined, the formulated ideal solution specification, and from an appreciation of usability heuristics obtained whilst investigating information gathering and evaluation techniques.

Both the prototype and the user manual were evaluated against the criteria using the feedback gathered, the overall outcome of which was that the prototype and user manual provide a good solution to the problems they address.

When evaluating, it was not possible to discern whether to design for the ideal systems solution would ultimately solve the working practices problems, it was only the functionalities that have been implemented in the prototype that were considered. It is also not possible to evaluate the actual use of the system rather than just simulations as this could only have been done outside the timescale of this project.

### **9.2.2 Greenacres After Care (Happy Days)**

One of the main achievements in terms of the organisation was that an appreciation of the time consuming and exhaustive nature of running the organisation was obtained that improved the quality of the system produced. The appreciation of the major legal requirements pertaining to the organisation also increased the quality and value of the system. For the organisation, the successful handover of an actual system that they may use and documentation to support this system were the main benefits to the organisation, and symbolised the developers appreciation of their participation in this project and justified to the managers the time they took to participate.

### **9.2.3 Application of Ethnographic Techniques**

The ethnographic approaches used in this project were rapid ethnography- where the problem situation was scoped and the focus and informants of the ethnography were identified, and evaluative ethnography to gather indirect feedback from the use of the prototype.

The data gathered as a result of the scripting and picture taking within the rapid ethnography of the analysis proved most valuable in portraying the working practices and the documents of the organisation. The audio clips taken also provided extra information that was not included in the scripting. Overall the video clips taken did not yield any new information that was not already noted in the scripts. In evaluation of the video clips, the possible reason why further information was not yielded was because the organisation is a busy and noisy environment, and as the video recorder was placed in a fixed position for observation it missed some of the processes that occur completely. Transcription of the various ethnographic sources into one complete document was effective in ensuring that no

information captured from the different sources was missed out in the construction of the analysis. The methodical highlighting and addition of the data into the analysis report was considered a most effective technique, as time and time again the information in the document was read through so a clear and detailed picture could be developed in the mind, which would reduce the need to keep referring to the analysis during the formulation of the possible solutions as the current practices would be well known.

The use of ethnography during the evaluation gave a clear picture of how well the users were able to adapt to and familiarise themselves with the prototype being, providing invaluable information in terms of the usability of the prototype.

At the end of the day it is believed that the use of ethnography was a great help in the understanding of the current working practices and usability of the prototype and enabled the developer to put themselves 'in the managers' shoes'. It is believed that the level of knowledge and appreciation of the working practices obtained through the use of this technique could not have been found simply through the conduction of interviews or other analysis techniques.

#### **9.2.4 Appreciation of Legal Requirements**

The appreciation of the legal requirements in terms of the National Standards pertaining to the organisation and the different official bodies involved was considered an achievement for this project as it brought the project over the boundaries of the developer's degree programme. It brought added-value to the development an evaluation of the solution that would not have been considered if the developer has only used the knowledge gained during their degree.

#### **9.2.5 Application of UML**

The application of UML during the design phase of this project has been considered a success and the information gathered invaluable to the design process. The steps used for the introduction of UML to the users were most effective in encouraging the users understanding and confidence in working with the developer to produce the class diagram. Involving the users in the production of this diagram aided the achievement of a high quality design, produced effectively with minimal effort.

### **9.3 Suggestions for Further Work**

There are a number of opportunities for further work to be conducted in relation to this project:

- Creation of further prototype iterations, gradually implementing functionalities to cater for the whole of the specification made is the main opportunity for further work to be conducted.
- Alteration of the scope to include the other activities of the organisation such as the dance class, to be provided for by the system.

- Development of a full accounting system for the organisation to eliminate their reliance on an external accountant.
- A critical evaluation of the use of the system over a year to determine how well the solution produced aids the managers.
- Further analysis of other day care centres to extend the system into a generic package that may be useful for many organisations.
- Extensions to the system to allow the organisation to create its own reports and forms.
- Extensions to the system to incorporate other useful packages such as word processing and publishing packages, so increased professionalism and reputation can be gained.
- Extensions to the system to include pictures of the children so they may be identified easily.

## References

- [1] Jason Charvat, *Understanding Project Methodologies*, in: **Project Management Methodologies: Selecting, Implementing, and Supporting Methodologies and Processes for Projects**, pages 1 -28. February 2003, Wiley Publishing
- [2] Avgerou C and Cornford T, *Developing Information Systems, concepts, Issues and Practice*, 2<sup>nd</sup> Edition, 1998, Macmillan
- [3] E. Trist et al, *The Social Engagement of Social Science: Volume II, The Socio-Technical Systems Perspective*, Tavistock Institute of Human Relations, 1989  
URL: [http://moderntimesworkplace.com/good\\_reading/archives/ericssess/sessvol2/sessvol2.html](http://moderntimesworkplace.com/good_reading/archives/ericssess/sessvol2/sessvol2.html)  
[Accessed: 25th October 2004]
- [4] Enid Mumford, *Chapter 5: Ethics*, in: **Designing Human Systems – the ETHICS Approach**, 1983  
URL: <http://www.enid.u-net.com/C1book1.htm> [Accessed: 25th October 2004]
- [5] Lynn McNay, *GreenAcres After School Care (Happy Days) inspection report*, 04 Aug 2004 URL: <http://www.ofsted.gov.uk/reports/index.cfm?fuseaction=ccreportHTML&id=87867>  
[Accessed: 3<sup>rd</sup> December 2004]
- [6] DfES, Ofsted, *Section C: Objective 1, Chapter 6: For the Under Fives*, in: **Department for Education and Skills and Office for Standards in Education Departmental Report**, pages 54-62, May 2002,
- [7] Ofsted, *Sessional Day Care: Guidance to the National Standards*, Sept 2001.  
URL: <http://www.ofsted.gov.uk/publications/index.cfm?fuseaction=pubs.displayfile&id=2429&type=pdf> [Accessed: 3<sup>rd</sup> December 2004]
- [8] Ofsted, *Out of School Care: Guidance to the National Standards*, Sept 2001  
URL: <http://www.ofsted.gov.uk/publications/index.cfm?fuseaction=pubs.displayfile&id=2433&type=pdf> [Accessed: 3<sup>rd</sup> December 2004]
- [9] James Matson, *The Cooperative Feasibility Study Process* Revised 2001  
URL: <http://www.agecon.uga.edu/~gacoops/info34.htm> [Accessed: 3rd November 2004]
- [10] Washington State Department of Information Services, *Feasibility Study Guidelines for Information technology Investments*, Revised 2000  
URL: <http://dis.wa.gov/portfolio/202G.htm> [Accessed: 3rd November 2004]
- [11] Milwaukee School of Engineering, *EE407 Feasibility Study Report Format*, August 2002.  
URL: <http://www.msOE.edu/eecs/ee/seniordesign/EE407ReportFormat.pdf> [Accessed: 21<sup>st</sup> January 2005]
- [12] David A. McMurrey, *Recommendation and feasibility reports*, in: **Online Technical Writing: Online Textbook**.  
URL: <http://www.io.com/~hcexres/tcm1603/achtml/feas.html> [Accessed: 21st January 2005]

- [13] Christine McMullin, *The Feasibility Report*, Assignment #6 of the course English 202D at Pennsylvania State University USA, 2005  
URL: <http://www.personal.psu.edu/faculty/c/v/cvm115/freport/feasassign.htm> [Accessed: 21st January 2005]
- [14] Jason Burke and Andrea Kirk, *Ethnographic Methods*, 2001  
URL: <http://www.otal.umd.edu/hci-rm/ethno.html> [Accessed: 25<sup>th</sup> October 2004]
- [15] Hughes et al. *Working with "Constant Interruption" CSCW and the Small Office, Computer Supported Cooperative Work*, pages 275 – 286, 1994, ACM Press
- [16] Hughes et al. *Moving out of the Control Room: Ethnography in System Design, Computer Supported Cooperative Work*, pages 429 – 439, 1994, ACM Press
- [17] David R. Millen, *Rapid Ethnography: Time Deepening Strategies for HCI Field Research, Symposium on Designing Interactive Systems*, pages 280 – 286, 2000, ACM Press
- [18] Avison DE and Fitzgerald G, *Information Systems Development: methodologies, techniques and tools*, (3<sup>rd</sup> Ed.) McGraw-Hill, 2003.
- [19] D Couprie et al, *Soft Systems Methodology*, A Report  
URL: <http://sern.ucalgary.ca/courses/seng/613/F97/grp4/ssmfinal.html> [Accessed: 30th October 2004]
- [20] Malcolm Eva, *Soft Systems Methodology*, Jan 2004  
URL: <http://www.acca.org.uk/publications/studentaccountant/1073535> [Accessed: 30th October 2004]
- [21] Bennett et al., *Schaum's Outline of UML*, McGraw-Hill, 2001 page 48
- [22] K. Jackson, *Choosing Data Gathering Techniques* 2002  
URL: [http://www.utas.edu.au/teachingonline/documents/choose\\_data\\_techniques.pdf](http://www.utas.edu.au/teachingonline/documents/choose_data_techniques.pdf) [Accessed: 5th November 2004]
- [23] LTDI, *Evaluation Cookbook*, Online Guide, 1998  
URL: <http://www.icbl.hw.ac.uk/ltdi/cookbook/> [Accessed: 5<sup>th</sup> November 2004]
- [24] J. Nielsen, *Ten Usability Heuristics*, 1994  
URL: [http://www.useit.com/papers/heuristic/heuristic\\_list.html](http://www.useit.com/papers/heuristic/heuristic_list.html) [Accessed: 3rd April 2005]
- [25] I. Sommerville, *Software Engineering*, 7<sup>th</sup> Edition, May 2004, Addison Wesley pages
- [26] S. Roberts, *DB31 Lecture Notes: Temporal Databases*, 2004
- [27] J. Matravars, *IN11 Lecture Notes: Lecture 3- Introduction to Information Systems Development: From Software Engineering Approaches to the IS Development Life Cycle*, 2002.

## **Appendix A – Personal Reflection**

Although the project entailed lot of hard work, it was both interesting and enjoyable to undertake and the challenge of conducting an external project was eagerly met. There are a number of lessons that may be reflected upon now the project has been completed.

As mentioned, one of the major feature was that this project was external, in that it was conducted for an organisation outside the company. The amount and level of participation of the people running and involved in the organisation should therefore be carefully considered, and some agreement should be made of the possible timings of meetings and work sessions required throughout the project.

This lesson comes from the experience of having to delay or reschedule meetings because of unforeseen circumstances and because the main contacts were generally very busy, particularly at holiday times.

Another feature that became apparent during the analysis was the extent and complexity of the problem being investigated. Although a scoping exercise was performed to attempt to cut down the problem definition, it was revealed that the analysis can lend itself to the production of a number of full and complex systems, providing increasingly technical functionalities to just a few of these processes. The discovery of this ultimately led to the need to prioritise and section the different functionalities, or modular systems, for successful and complete implementation of one of these modules to be developed.

A lesson to learn from this therefore is that a number of initial scoping exercises should be conducted instead of just one to drill down into the problem and pick out only some of the problems to solve that suit the size of the project.

Overall, experience of the project has been good, aided by the skills already held in project and time management. Further development of my communication and time management skills has been attained that will prove valuable in the future. Although sometimes difficult to meet with the users, once meetings were underway they proved very productive, especially in the case of the UML workshop. I enjoyed participating in the working practices during the ethnographic study and value the experiences greatly as they enabled me to produce a solution of better quality.

One of the main personal objectives of mine was to produce the best quality solution as I could and fully understand the working practices and empathise with the managers to create this solution. In conclusion of this project I can safely say that I have satisfied my goal.

## Appendix B – Original Project Schedule

[illegible]



## Appendix C – Interactive Research

### Interview questions

1. What would you consider to be the main things that happen at the business?
  - a. what tools do you think you use at the moment to help you
  - b. what processes do you think you seem to run through every day week
2. Who are the different people involved in the playgroup?
3. What changes would you like to see?

### Activity Walkthrough Prompts

The prompts for the managers that were used by the developer to try and get the most out of the walkthrough are as follows (they have been developed from the knowledge of a day obtained at the initial meetings):

- 7.30 Start
  - *When the children come through the door how do you record that they are here and who does this*
  - *Where do you keep these records after you have used them*
  - *What other events happen when a child and guardian walks through the door*
  - *What happens on a weekly basis that may not happen every day*
  - *Is there anything else that could happen when the setting is open for the first session*
  - *Sample artefacts?*
- Before and After school children age from 3 to 8
- Upstairs 3 – 5 nursery
  - *Any particular provision made for these children*
  - *What events may occur during this time*
- Downstairs aged 6 to 8
  - *Any particular provision made for these children*
  - *What events may occur during this time*
- Serve Breakfast
  - *How do you record if and what a child has eaten*
  - *How do you make sure that the child is not allergic to anything you are giving them*
  - *Any other events that may occur during this time*
- Free Play
  - *Any particular events that happen every day at this time*
  - *Any events that may sometimes happen during this time*
- 8:45 go to St Annes and Greenacres School
  - *How is this arranged*

- *Any Artefacts (documents) used?*
  - *Where do you keep the records after you have used them*
  - *Who are the people involved*
- 9:15 open for Happy Days Preschool
  - *What artefacts do you use*
  - *What information do you need when you start this session*
  - *Where do you keep these records*
  - *What other events and activities happen during this time and who are the people involved*
- 13:30 finish
  - *Are there any special procedures for when the children finish*
  - *Are there any action or events that may only happen occasionally*
- pick kids up from school
  - *What artefacts are used*
  - *What information do you record*
  - *Where keep records*
- Aftercare until 17:30

## Appendix D – Full Analysis Report

### Ethnography Analysis Report

Version Number	Date	Reviewer	Summary of changes
Version 1	15 <sup>th</sup> Nov 2004		First draft
	19 <sup>th</sup> Nov 2004	Lesley Jones	
Version 2	12 <sup>th</sup> Dec 2004		Added information gathered from Feedback session

#### 1. Introduction

This document is intended to show the procedures used and the results of the ethnographic analysis of the day to day running and administration of Greenacres After School Care (Happy Days).

#### 2. Structure of this Document

This document intends to analyse the data collected during the interviews with managers and the ethnography sessions held at the setting. The processes, or work practices have first been identified and analysed to consider the artefacts, intangible information and people involved in each process. The nature and information held within the identified artefacts has then been analysed and documented. The people involved have then been described and considered in terms of the importance and nature of their involvement within the working practices.

##### 2.1 Dates and times

The ethnography session took place between Tuesday 9<sup>th</sup> November and Wednesday 10<sup>th</sup> November.

### 3. Process Identification

The table below aims to clearly show the processes identified and analysed as a result of the ethnography session, the artefacts and other information related to that process and the people involved during that process.

Process No.	Process Name	Process Description	Artefacts Involved	Intangible information involved	People Involved
<b>1. Administration Processes</b>					
1.1	Morning Register Children	<p><b>Pattern of behaviour:</b> Children enter Before school session. Their names are ticked off on the school tickets for AM. The time they enter is recorded next to their name in the In column of the register.</p> <p>If a child is not present by the time they are due to be taken to school a O is put in the In column of the register and the child is crossed off the school ticket.</p> <p>The expected number of children to be taken to school is totalled and written on the school ticket.</p> <p>Any information regarding picking up for that afternoon is altered on the school ticket and register</p> <p><b>Time Frame:</b> Daily AM</p>	<p>School Tickets B&amp;A Registers Daily and Weekly Changes Book</p> <p><b>How Shared:</b> Tickets updated by manager, passed to Staff who use for pickup who then pass back to managers for register</p>	<p>Spoken word that a child will not need picking up in the afternoon for that day- action is to cross then off Ticket and O them on Register</p>	<p>Staff members Managers</p>
1.2	Afternoon Register children	<p><b>Pattern of behaviour:</b> Children enter After school session. The time they leave after school is recorded next to their name in the Out column of the register. This says that the children have attended in conjunction with the school ticket.</p> <p>The school ticket is used in conjunction with the register to record that a child is not present at after school; a O is put in the Out column of the register. The child has already been crossed off the school ticket in the PM column.</p> <p><b>Time Frame:</b> Daily PM</p>	<p>School Tickets B&amp;A Registers Daily and Weekly Changes Book</p> <p><b>How Shared:</b> Ticket updated by manager, passed to Staff who use for pickup who then pass back to managers for register</p>	<p>Spoken word from a teacher that a child has been picked up that afternoon- they have been crossed of Ticket as in 4.2.</p>	<p>Managers Staff members</p>

Process No.	Process Name	Process Description	Artefacts Involved	Intangible information involved	People Involved
1.3	Happy Days Register Children	<p><b>Pattern of behaviour:</b> Children enter the Playgroup session at 9.15 and approximately 15 minutes are given for all the children to enter that session. The children are sat down and their names are called. Once they hear their name they go up to a member off staff to get their hand stamped and to be ticked off on the Playgroup Register.</p> <p><b>Time Frame:</b> Daily Approx 9.30</p>	<p>Playgroup Register</p> <p><b>How Shared:</b> Used only by supervisors</p>	<p>If a parent phones to say their child will not be in they are O on the register</p>	Supervisors Managers
1.4	Add new children to the Before and After School Care or to the Playgroup	<p><b>Pattern of behaviour:</b> When a new child wishes to join the Before and After School Care or the Playgroup, The parent must fill out some documentation consisting of a contract, a form about the child and their emergency contact details. This documentation is kept by the playgroup and the child added to the relevant register and/or ticket from the Daily and Weekly changes book, or if they wish to join the next day, they are put straight onto the register (See 1.7 and 1.8)</p> <p><b>Time Frame:</b> All year round</p>	<p>Contract Form Contact Details Daily weekly changes book B&amp;A Registers School Tickets Playgroup Register</p> <p><b>How Shared:</b> Information passed between parent and managers</p>	<p>Must remember to add the child to the daily changes book or the relevant register</p>	Parents Managers Supervisors
1.5	Recording Holiday period bookings for B&A and Playgroup	<p><b>Pattern of behaviour:</b> A number of places are available for children who wish to attend the holiday sessions when they are off school. If a child wishes to attend, the parent asks the managers. The manager will look in the Holiday Bookings Book and check the number of places available during the holiday period. If there is a space, the child is added as due to come to the holiday session. Children currently attending the before and after sessions are automatically guaranteed a place in the holiday sessions and it is up to the parent to inform the managers whether they will be attending or not as stated in their contract.</p> <p><b>Time Frame:</b> All year round as and when</p>	<p>Holiday Bookings Book Holiday Register</p> <p><b>How Shared:</b> Managers only use this book</p>	<p>Remembering when a parent has asked for a holiday place and it has not been entered into the book immediately</p>	Managers Parents

Process No.	Process Name	Process Description	Artefacts Involved	Intangible information involved	People Involved
1.6	Updating contact cards	<p><b>Pattern of behaviour:</b> When a new child is enrolled in the organisation, emergency contact details are captured within the contract information. These contact details are periodically updated onto record cards for each child, which would then be taken out of the building and used if there was an emergency. During the update, a list of the newly added children or children with changed contact details is written on a working document. For each child on the list, their contract is found and the information added to a record card. The child is then ticked off the working list. The cards are most important, however the contact details are updated on both contract and card.</p> <p><b>Time Frame:</b> Weekly/Monthly</p>	<p>Contact Details from Contract Contact Detail Record Cards Working Document</p> <p><b>How Shared:</b> Supervisors update cards for use by managers</p>	None- change in contact details is written down on the working document if parent informs managers of change	Managers Supervisors
1.7	Daily and Weekly preparation of the School Tickets and register	<p><b>Pattern of behaviour:</b> Before the beginning of each week (Monday) the school tickets and the register for the Before and After School children are updated with information relating to children for that week that has been entered into the Daily and Weekly Changes book. Information is entered in the Daily and Weekly Changes book when the managers are notified by parents either by phone or in person. Once that information has enabled the school ticket and register to be modified appropriately, it is crossed off in the book. New children are also written down in the daily change book to be added for their starting week. Children are rarely removed from the lists or register permanently.</p> <p><b>Time Frame:</b> Weekly (Monday) Daily (if parent phones up during the day with information)</p>	<p>School Tickets B&amp;A Registers Daily and Weekly Changes Book Contract Form</p> <p><b>How Shared:</b> No sharing managers only involved</p>	Information about a child that has been remembered by a manager that was not noted down in the Daily and Weekly Changes Book Phone calls from parents during the day	Managers
1.8	Weekly preparation of the Playgroup Register	<p><b>Pattern of behaviour:</b> Every week the Playgroup register may change due to children entering the Playgroup. The register is rarely altered to remove a child from playgroup except at the end of the year. If a new child is expected to start that week, either by notification in the Daily and Weekly changes book or simply from a new contract, their name is added to the register.</p> <p><b>Time Frame:</b> Weekly (Monday)</p>	<p>Daily and Weekly Changes Book Playgroup Register Contract Form</p> <p><b>How Shared:</b> Managers prepare these for Supervisors</p>	Remembering to add a child from the contract if not put in the Daily and Weekly Changes Book	Managers Supervisors

Process No.	Process Name	Process Description	Artefacts Involved	Intangible information involved	People Involved
1.9	Generating letters to parents	<b>Pattern of behaviour:</b> and are given to parents mainly to notify them about fee payments <b>Time Frame:</b> All year round as and when	Letter <b>How Shared:</b> Given to parent or child by manager		Parents Managers
1.10	Giving notices to parents	<b>Pattern of behaviour:</b> Other notices to parents are usually given verbally to each parent e.g. we will be closed next Monday. <b>Time Frame:</b> All year round as and when	None	Verbal communication between parent and Manager	Managers Parents
1.11	Signing visitor's in and out	<b>Pattern of behaviour:</b> When a visitor comes to the playgroup e.g. myself or an inspector, they are required to write in the Visitors Signing in and out Book for possible emergency reasons and to know who is in the building when <b>Time Frame:</b> All year round as and when	Visitors Signing In and Out Book <b>How Shared:</b> Used by visitor's for the managers information	Visual sighting of the visitor may mean they have not signed in the book	Visitors Managers
<b>2. Recording Processes</b>					
2.1	Recording an Accident	<b>Pattern of behaviour:</b> When an accident occurs involving a child or a number of children, it is recorded in the accident book and all the children involved are noted down. The parent is then notified that the child has been in an accident and a parental signature is required to acknowledge that they have been informed of the accident and the action taken <b>Time Frame:</b> All year round as and when. The record may not be recorded in the book for a number of days after the accident occurred.	Accident Book <b>How Shared:</b> Between parents and Managers	Verbal communication to parent that the child has had an accident	Parent Staff Members Managers
2.2	Recording an Incident	<b>Pattern of behaviour:</b> When an incident occurs involving a child or a number of children, it is recorded in the incident book and all the children involved are noted down. The parent is then notified and a parental signature is required to acknowledge that they have been informed of the incident and the action taken. <b>Time Frame:</b> All year round as and when. The record may not be recorded in the book for a number of days after the incident occurred.	Incident Book <b>How Shared:</b> Between parents and managers	Verbal communication to parent that the child was involved in an incident	Parent Staff Members Managers

Process No.	Process Name	Process Description	Artefacts Involved	Intangible information involved	People Involved
2.3	Recording medicine requirements	<p><b>Pattern of behaviour:</b> If a child is ill or is on constant medication, the parent may ask the managers to administer medicine to the children during the hours that they are in the setting. If this is the case, the child's name, the name of the medicine and details of all dosages given are recorded in the medicine book and signed by the parent and manager and the is medicine stored in a safe place.</p> <p><b>Time Frame:</b> All year round as and when</p>	<p>Medicine Book</p> <p><b>How Shared:</b> Between parents managers and staff administering medicine</p>	None	Parents Staff Members Managers
2.4	Recording Fire Regulations, incidents and practices	<p><b>Pattern of Behaviour:</b> It is required by Ofsted that a record is kept of the fire regulations, when the group has practised these fire procedures with the children and when there has been a fire in the building and what happened.</p> <p><b>Time Frame:</b> As and when all year round</p>	<p>Fire Log Book</p> <p><b>How Shared:</b> Managers only involved</p>	None	Managers
2.5	Record Staff Details	<p><b>Pattern of behaviour:</b> When a new member of staff comes to work for the business, relevant details about them (Name, address, phone number) are captured and stored in a staff details book.</p> <p><b>Time Frame:</b> As and when all year round</p>	<p>Staff Details Book</p> <p><b>How Shared:</b> Between staff and Managers</p>	None	Staff Members Supervisors Managers
2.6	Planning activities according to QCA Regulations	<p><b>Pattern of behaviour:</b> QCA are a public body that publish guidelines as to the education of children during their playgroup year (2½/3 - 5). Long term planning is first done to decide which learning goals the children will be doing for the year, then in more detail a topic for a month, to finally producing a weekly list of activities for the playgroup children according to the previous aggregated planning.</p> <p><b>Time Frame:</b> All year round/Weekly generation of activities</p>	<p>Stepping stones/ QCA early learning goals file Weekly list Long term planning list Mid term list</p>	None	Managers Staff Members Supervisors Ofsted Oldham Council Rep.
2.7	Filing documents	<p><b>Pattern of behaviour:</b> All the documents discovered within this analysis session apart from the daily school tickets and the master documents (templates) are filed for the minimum of 5 years</p> <p><b>Time Frame:</b> All year round/Yearly</p>	All documents	None	Ofsted Oldham Council Rep. Managers



Process No.	Process Name	Process Description	Artefacts Involved	Intangible information involved	People Involved
<b>3. Financial Processes</b>					
3.1	Determining the number of hours staff worked	<p><b>Pattern of behaviour:</b> Staff tend to have a set number of hours in which they work that they are given when they start the job. However when staff come in to work they must sign in the Staff Book the time they started and similarly sign out once they leave. At the end of the week ready for the next week the Staff Book is used with a Working Hours Book to write in the number of hours done each day for each member of staff then these hours are totalled.</p> <p><b>Time Frame:</b> Weekly (Monday)</p>	<p>Staff Book Working Hours Book</p> <p><b>How Shared:</b> Staff book used by staff and supervisors. Working Hours Book used by managers only</p>	Visually spotting which staff members are in on which days as they forget to sign in and out	Staff Members Supervisors Managers
3.2	Processing payments made by parents for both Before and After School Care and the Playgroup	<p><b>Pattern of behaviour:</b> Either a cheque or cash payment is given to the managers by either the children or the parents. This payment is entered into the Payments book in the Amt Received column on the particular child's page that is making the payment. The money is put into the cash box. The figure in the Amt Due column is updated. Upon meeting with the parent a receipt is given for the payment.</p> <p>Depending on the child's free place status as identified in process 3.6, some parents may not need to pay fees during certain terms.</p> <p>Money may also be given specifically for Tuck in which case the balance for the child in the Tuck book is altered (see 3.3).</p> <p><b>Time Frame:</b> As and when</p>	<p>B&amp;A Payments Book Playgroup Payments Book Receipt Tuck Book</p> <p><b>How Shared:</b> The receipt is given to the parents by managers who keep a copy</p>	Need to remember when a parent/child has paid money in to give the parent a receipt	Parents Managers
3.3	Recording a child's spending on food (Tuck)	<p><b>Pattern of behaviour:</b> In the AM session children are given basic breakfast if they so wish or in the PM session may be given crisps etc. A working document is used every morning and evening to write down the name of the child and how much they have spent on Tuck, e.g. 20p for a bowl of cereal. This working document information is then transferred to the Tuck Book and the balance increased or decreased for the child depending on if they are in credit or not. The balance in the Tuck book is decreased when the parent makes a payment (See 3.2) <b>Note:</b> The Tuck account and Fees account for any one child are separate.</p> <p><b>Time Frame:</b> Daily (AM and PM) (working document) Weekly (Tuck Book)</p>	<p>Tuck Working Document Tuck Book</p> <p><b>How Shared:</b> Staff work on working document Numbers transferred into Tuck Book by Managers</p>	Visual information that a child has had some food without writing it straight down on the working sheet but just into the Tuck Book	Staff Members Managers

Process No.	Process Name	Process Description	Artefacts Involved	Intangible information involved	People Involved
3.4	Producing weekly accounts	<p><b>Pattern of behaviour:</b> On a Monday the accounts for the previous week are produced. Information is collected for what the balance was for the account, What money has come in and from where (See 3.2 and 3.3) and what money has been spent and where e.g. NI, Tax and finally the total that should be in the box ready for the current week. This information is sent to the accountant by post and accountant adds this information to the main financial accounts of the business.</p> <p><b>Time Frame:</b> Weekly (production) Yearly (sent to Accountant)</p>	<p>Cash flows sheet for the Week</p> <p><b>How Shared:</b> This sheet is sent to the accountant for inclusion in the main accounts</p>	None.	Managers Accountant
3.5	Generating pay-slips for staff	<p><b>Pattern of behaviour:</b> Following the determining of the number of hours staff have worked (See 3.1) the total hours for each member of staff is phoned through to the accountant. The accountant then generates a pay slip for that member of staff and posts these back to the playgroup.</p> <p><b>Time Frame:</b> Weekly</p>	<p>Working Hours Book</p> <p>Pay slip</p> <p><b>How Shared:</b> Working hours information phoned through to accountant</p>	None	Managers Accountant
3.6	Handling Grants for Playgroup children	<p><b>Pattern of behaviour:</b> Children who are eligible for an early education place are identified when they are enrolled for the playgroup and the date from which they can start receiving the grant determined. A form detailing these children is then sent to the Oldham council official. Money is then allocated to the playgroup by the Government based on the information in the form. No money is taken from the parents during the time that their child is eligible for a free place, they are merely notified when this period will start and/or end. Parents will pay money as in process 3.2 during the terms that their child is not eligible for a free place.</p> <p><b>Time Frame:</b> Grant money is given to the Playgroup every quarter. Children are eligible for a free place starting the term after their third birthday for up to six terms.</p>	<p>Contract Form</p> <p>Payments book</p> <p><b>How Shared:</b> Used by managers only</p>		Managers Parents Oldham Council

Process No.	Process Name	Process Description	Artefacts Involved	Intangible information involved	People Involved
<b>4. Physical Processes</b>					
4.1	Taking children to school	<b>Pattern of behaviour:</b> The school tickets are taken with the children to the relevant school. The ticket is checked against the number of children brought to school to ensure all the children arrived safely. <b>Time Frame:</b> Daily AM	School Tickets <b>How Shared:</b> used by Staff only	Counting up of the children once reach the school	Staff members
4.2	Picking children up from school	<b>Pattern of behaviour:</b> Staff leave with the corresponding School Ticket to pick the children up. As the children come out and line up next to the staff member they are ticked off list. The list is checked to make sure the correct children are present and the children counted. If a child on the list has not come out of school, their whereabouts is checked with a teacher at the school to see if they have already been picked up. If this is the case the child is crossed off the list and the number of children updated. The children are escorted back to the setting. <b>Time Frame:</b> Daily PM	School Tickets <b>How Shared:</b> used by Staff only	Counting up of children before leaving school Determining the whereabouts of children with the teachers if not previously notified by parents (see 1.7)	Staff Members

#### Process 5: Holiday Period Process

Once a holiday booking have been recorded during process 1.5, they are added to the holiday register for that holiday. When the holiday period commences (for example half term) children come to the session from 7:30am to 5:30pm each day of the holiday, bring a packed lunch with them for dinner as they would do for school.

At the start of the holiday session a register is taken to note the children present that has the times that they come in also, similar to the B&A registers.

Fees for the holiday sessions are calculated for each child in the payment book. These fees are also subject to a note in the contract that says two weeks of holiday sessions are at half price for full time children, and so the parent has to state whether this is so for that particular holiday period through the completion of a form detailing all the holidays and when the children will be attending.

If a child is expected not to attend a holiday session (e.g. for two weeks during the summer as the parents are also off) then a months' notice needs to be given to the managers and a form filled in stating this.

The registers for the holiday period are then updated with the information from the forms filled out by parents during the year.

#### 4. Artefact Definition

Artefact	Definition
<b><i>School Tickets</i></b>	<p>The School Tickets are slips of paper that are generated daily by the managers. They detail the names of the children that are being taken to school in the morning (AM column) and the names of the children that are being picked up from school in the evening (PM column). There are 4 slips generated each morning – an infant's and a junior's slip for each of the two schools- St. Anne's and Greenacres.</p> <p>The name of the school and which age group it is for each slip is not written on the slip as it is expected that the staff know from the children's names which school and age group the slip is for.</p> <p>For each of the age groups and schools, a template has been written up of the children that are likely to be on the list (it is assumed this is generated at the beginning of the year when the children enrol). These templates are then photocopied and children's names crossed off and/or added when necessary each day for the two different times.</p> <p>It may be for instance, that Child A will need to be taken to school in the morning and so is on the list, but the managers get a phone-call later that day to say that they will not need picking up in the evening and so their name is crossed off the list.</p>
<b><i>Working Hours Book</i></b>	<p>The working hours book is used in conjunction with the staff sign in and out book to calculate the number of hours a member of staff worked each week. There is a page for each member of staff; the hours for that staff member is worked out for each day of a particular week and totalled at the end for the number that will be phoned through to the accountant so he can generate the pay slips. The letters "HP" in the book denotes when the member of staff should get holiday pay.</p>
<b><i>Pay slip</i></b>	<p>Pay Slips are generated by the accountant. They are posted to the managers' address weekly. This is a slip of paper that details the staff member's name and the amount earned for that week.</p>
<b><i>Cash flows sheet for the Week</i></b>	<p>Each week a cash flow sheet is generated by the managers. This details the cash that has moved into and out of the business during the week. A balance is then totalled (which should equal the physical money in the cash box) and the balance is carried over to the following week. At the end of the year, all the cash flow sheet are sent to the accountant so he can prepare a full profit and loss and balance sheet statement at the end of the year and ensure that the accounts are all in order.</p>
<b><i>Tuck Working Document</i></b>	<p>The tuck working document is used daily predominantly by the playgroup supervisors. It records the name of each child, what they have eaten and how much it costs for the morning session (AM) and similarly what they have eaten and how much it cost in the second session (PM) for each day of the week. This working document is then used in conjunction with the Tuck Book to update the balance owed by each child. These working documents are split into infants and juniors as they are separated into different rooms of the setting.</p>
<b><i>Tuck Book</i></b>	<p>The Tuck Book is split into Infants and Juniors of the two schools and holds the names of all the children currently holding a contract with the business to attend the before and after school care. This book is updated daily by the managers to store a running balance of the amount of money each child owes due to eating tuck. This balance is also updated by the managers when parents pay some or all of the balance of the book for their child.</p>
<b><i>B&amp;A Payments Book</i></b>	<p>The B&amp;A Payments book holds information about the amount of money in terms of fees owed by each child attending the sessions. This payments book is split into the two schools and into infants and juniors to make finding children's records easier. The book holds the child's name, the balance that is due and the various transactions that have occurred with parents when they have paid previously and how they have paid i.e. cash cheque.</p>
<b><i>Receipt</i></b>	<p>A receipt for any payments made by parents is provided by the managers. This is done using a standard receipt book with the date, and the amount paid.</p>

<b>Artefact</b>	<b>Definition</b>
<b><i>Playgroup Payments Book</i></b>	The Playgroup Payments book holds information about the amount of money in terms of fees owed by each child attending playgroup. The book holds the child's name, the balance that is due and the various transactions that have occurred with parents when they have paid previously and how they have paid i.e. cash cheque.
<b><i>Staff Book</i></b>	The staff book records the times that each member of staff comes in and out of work for each day of the week. These times are recorded to determine the number of hours that staff have worked for each week so that their pay can be determined.
<b><i>Stepping stones/QCA early learning goals file</i></b>	The public body QCA in conjunction with the DfES and Sure Start have produced a file of learning goals that the children in the playgroup should be helped to achieve by the time that they are ready to attend nursery. These learning goals are divided into six different areas such as numbers and letters, weather or important people and some of these should be taught to the children during their year at the playgroup in order for the playgroup to receive the early education grant.
<b><i>Long term planning list</i></b>	Planning of the goals described above and actually teaching those goals to the children is necessary in order to receive a grant. A long term planning sheet is produced every year for the different topics or subjects that will be taught to the children attending the playgroup for that year. At least one subject from each of the main areas in the learning goals file should be taught to the children per year.
<b><i>Mid term list</i></b>	A mid term list is generated to plan monthly the activities related to the learning goals that will be done with the children. This list or chart is pinned to the notice board to inform parents and other staff members of the topics that will be taught.
<b><i>Weekly list</i></b>	From the mid term planning list weekly lists highlighting the subjects to be taught each week and the activities that will be done with the children on particular days are produced. These are used by the managers to plan with the supervisors what will be done with the children each day.
<b><i>Staff Details Book</i></b>	The Staff Details book records the name, address and contact details of each member of staff working for the business. It also holds details of the qualifications each member of staff has and the working hours that were agreed upon when the member of staff first started work for the business.
<b><i>Medicine Book</i></b>	The Medicine book holds details of all the children who have been administered a dose of medicine during their time at the setting and the medicine that has been administered. When a child first needs a particular medicine, the medicine name, details of the dose and the child's name is written down in the book and the parents must give their initial written consent for that medicine to be administered, in the form of a signature. Subsequent doses of that particular medicine need only verbal consent of the parent. The parent will notify the managers when a child stops needing a medicine, and a note is then put next to that child and medicine in the book.
<b><i>Accident Book</i></b>	The details of any accident, such as a child falling and cutting their knee, are recorded into the accident book. This details the date and time of the accident, the nature of the accident, such as how the child fell etc., the children involved if it was more than one, and the staff member that was present and dealt with the accident and how it was dealt with. This accident record needs to then be signed by the member of staff and the parent/guardian of the child to acknowledge that they know the accident happened. The parent is also given a copy of the accident details that they have signed.
<b><i>Incident Book</i></b>	The incident book holds the same pieces of information as the accident book, and requires the signature of both staff and parent, however this book is used to record incidents, such as a child biting another, that have happened in the setting. The behaviour of the child is monitored and reoccurring offences discussed seriously with parents and in some cases the managers may have to ask the child to leave.
<b><i>Fire Log Book</i></b>	The fire log book holds details of the procedure to be followed in the event of a fire, all the fire drills that they have held at the setting, and any actual fires that have occurred at the setting. It details the date, time and nature of each of these events and is signed by the manager.

<b>Artefact</b>	<b>Definition</b>
<b><i>Visitor's Signing In and Out Book</i></b>	The visitor's book records any visitor's to the setting that are not parents, children or members of staff related to the business. It records the visitor's name, the time that they entered the setting and the time that they left. This is mainly for fire and security purposes.
<b><i>Daily and Weekly Changes Book</i></b>	The daily and weekly changes book acts as a sort of post-it note system to the managers where bits of information, such as "Sarah will not need picking up next Tuesday" are written rather than relying on the memory of the staff or managers. The pieces of information are not in any specific order, they are merely written as a series of points as and when they are remembered or given. The book is then read through each week and day and the information recorded onto the relevant documentation before being crossed out in the book.
<b><i>Playgroup Register</i></b>	The playgroup register used is a standard school register. The children are hand written into the first main column and then their attendance each day recorded using a O or a / for out and in.
<b><i>B&amp;A Registers</i></b>	The Before and After School registers are made as weekly lists, that are just photocopied from a template at the start of the year and any new children added to the bottom as necessary. There is one register for the morning session and one for the afternoon session. Each register has the child's name in the first column, then a column for each of the days Monday to Friday that are subsequently divided into In and Out. When the child enters the setting, the time that they entered is recorded into the In column for the day. When the child leaves, either to go to school in the morning or to go home in the afternoon, the time is recorded into the Out column. This is not to determine the fees paid, as it is set per session, but for emergency and child safety to know exactly which children are in the setting at a particular time.
<b><i>Contact Detail Record Cards</i></b>	The contact detail record cards are a set of record cards, one for each child enrolled within the business, that has their name on and the names and phone numbers of their emergency contacts. These cards are important to keep constantly updated ready to be used in an emergency. The main reason these are kept is because a record box is small and easy to carry out of the building in an emergency, and easier to search than looking through the pile of contracts for a child's contact details.
<b><i>Contract Working Document</i></b>	This working document is used by the member of staff updating the record cards to make a list of the children whose contact details need to be updated from contracts, or where new information has been given. Once the contact details have been added or updated onto the record card for that child, the child is crossed off the list.
<b><i>Holiday Bookings Book</i></b>	The holiday booking book is used to record the intake and names of children wishing to attend the sessions held during school holidays. Up to 66 children aged 3 – 8 are allowed to attend the sessions. Parents may specify that they wish their child to attend these sessions at the time of signing the contract, in which case the child's name is added to the book. There are two columns for the book, one juniors and one infants as the sessions are held in two different rooms according to the children's age. Places are allocated by entering the name of the child in the relevant column on a first come, first served basis.
<b><i>Holiday Register</i></b>	The holiday register is made every week for each week that is classed as a holiday i.e. weeks occurring out of school term time. These registers have the child's name in the first column, then a column for each of the days Monday to Friday that are subsequently divided into In and Out. When the child enters the setting, the time that they entered is recorded into the In column for the day. When the child leaves to go home in the afternoon, the time is recorded into the Out column. Again this is for security reasons and in the event of an emergency to know which children were present at what time as there is a set fee for the sessions.
<b><i>Letter</i></b>	Letters to parents are usually handwritten and detail some specific information to the parent that is not a general notice. It is rare that any general notices will be given to parents in the form of a letter because the letters are handwritten.

<b>Artefact</b>	<b>Definition</b>
<b><i>Form for holiday sessions</i></b>	A form is given out to all parents who have requested their children to attend holiday sessions. This form details the actual holiday sessions that the child will need caring for, as parents will most likely take at least some days off when their child is out of school, and the 2 weeks' worth of sessions that the parents would like at half price.
<b><i>Contract Form</i></b>	The contract form currently consists of 3 separate sheets of paper; one which has general definitions of terms and guidance of procedures to follow, for example payment queries be directed to managers; one which details the timings and fees for each sessions and the terms of contract that the parents must sign, and one that captures all the contact details and other important information that must be obtained for each child being enrolled (See Contract Contact Details below). Parents are expected to look at and fill in each of these sections as appropriate before signing the form which signals the enrolment of the child. Details of the sessions required by the parent for their child are also detailed in this contract form.
<b><i>Contract Contact Details</i></b>	The sheet of the contract that captures the contact details for the child also captures other important information relating to the child. The contact details section requires the parent provide information of three contact details for the child, which includes the name, address, two phone numbers and the relationship to the child, as well as details of the child's doctor. The form then captures the child's name and date of birth, any infectious illnesses the child has had, any allergies or other health issues of the child, a list of the child's immunisations, and any further considerations that should be made for the child.

## 5. People Definition

The people involved with the day to day running of the business and the business as a whole have been identified below in terms of the individuals, society, organisations and groups.

### 5.1 Individuals

#### *Manager*

The managers are the key members within all the business processes. They are involved in all items of the business and the business paperwork. They also take an active role in looking after the children if the staff numbers are low. Their role is to administer and run the playgroup according to the guidelines given by the governing body Ofsted.

#### *Supervisor*

The job of the supervisors is to be the next in charge of the running of the playgroup and before and after school sessions during the day. If the managers are not present or are busy with other activities, the supervisors are responsible for taking registers of the children and organising the children's activities. The supervisor's role is more that of looking after the children and ensuring that they have enough activities to do and that the children are safe. They have very little or no paperwork to do except for taking registers and recording children's Tuck. There are two supervisors that work together to oversee the playgroup and before and after sessions.

#### *Accountant*

The accountant's role within the business is purely functional and not associated with the care aspect of running the business. Their job is to calculate staff payslips and the year-end accounts of the business. It is the feeling of the managers that the accountant does not correctly calculate staff wages and so they would like to be able to check the accountants' wage calculations for themselves.

## **5.2 Groups**

### ***Staff Members***

As a group the staff members' role is to take the children to and from school safely and ensure no child gets lost along the way. They help within the setting (premises) as assistants to look after the children and play with them or look after them when they need to go to the toilet or they get upset. They are involved with very little paperwork, the main piece being to sign in and out of the staff book and occasionally they will be asked to copy contact information from children's contracts to the contact detail record cards. There are seven staff members in total.

## **5.3 Society**

### ***Parents***

Parents of children that are currently attending the playgroup and before and after school sessions have an indirect role within the running of the business as it is their children that are being cared for so they have a vested interest in how the business is run and the quality of care it provides. They therefore act as an incentive for the business to run its operations correctly and provide adequate documentation in various situations, for example when a child has an accident, or when recording what a child has eaten for Tuck. The more direct role of the parents is in the payment of fees and the balance of the Tuck book, and if there is a need for them to sign incident and accident books.

### ***Visitors***

Visitors to the business include any external parties that are neither staff nor current attendants of the playgroup or before and after school sessions. It is required in the National Standards that these visitors sign in and out of a visitor's book to record the duration and nature of their visit. The types of visitors may include the parents of potential children, workmen and any business officials or guests of the managers (such as myself).

## **5.4 Organisations**

### ***Ofsted***

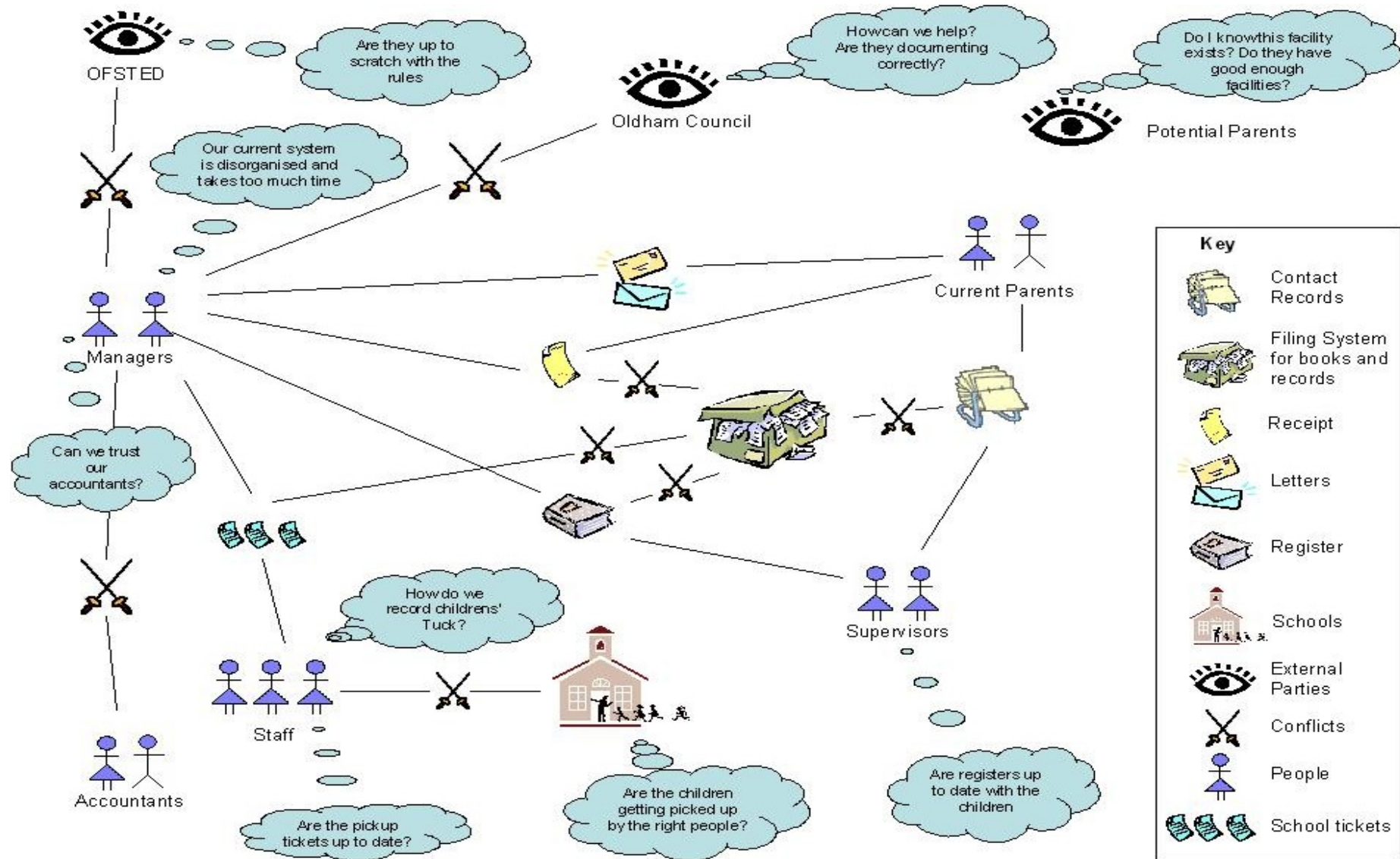
Ofsted is a non-ministerial government department that aims to regulate the running of playgroups and day care providers (early years childcare) to ensure that they are providing a good standard of care and provide good documentation as to the day to day running of a business of this type. They undertake yearly inspections of the business to ensure that they are following the national standards that the DfES have provided and comment on how well they are following these and how they could be improved. Ofsted work with the local authorities to help them help these early years childcare businesses improve their operations by giving them information (Ofsted's Guidance on the National Standards), advice and training, to ensure that they are following regulation and providing the necessary documentation.

### ***Oldham Council (Sure Start Oldham)***

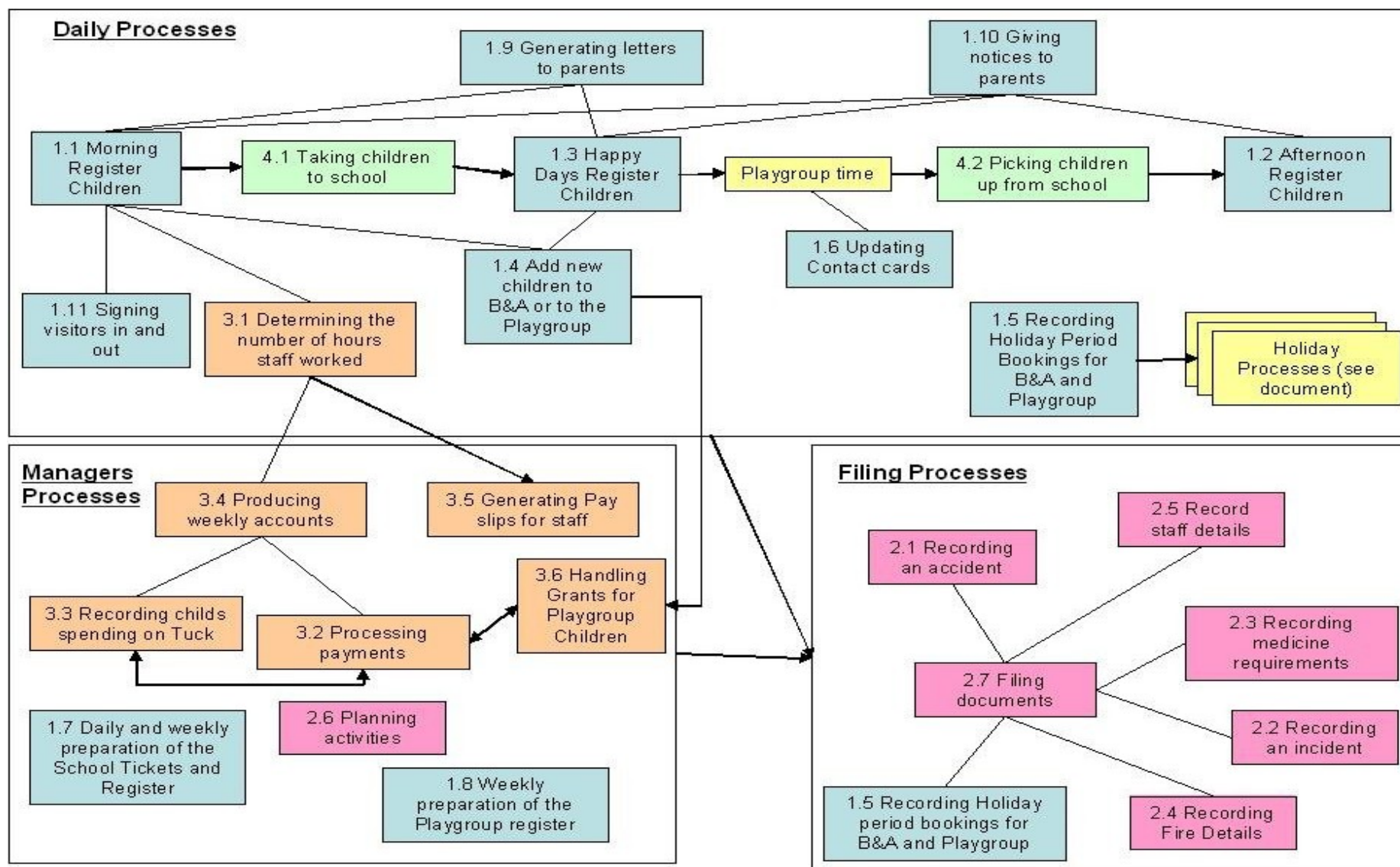
In accordance with the DfES, all local authorities have a department associated with early education childcare, and this department is run by the organisation Sure Start. Oldham's Childcare department is known as the Children's Information Service and is run by Sure Start Oldham. The representative from Sure Start Oldham working with the Greenacres After School Care (Happy Days) is called Krishna Sisadia. Her role within the business is to provide information and advice on the National Standards and how to best adhere to them, and also to provide information on the Early Education Places Scheme run by the DfES and how this should be implemented for the children attending Happy Days playgroup that are aged 3 to 4.



## Appendix E– Rich Picture of the Current Situation



## Appendix F – Business Process Flow Diagram



## **Appendix G – Sections of Feasibility Report**

### **Original table of contents for the Full Report**

Executive Summary (included)

1. Project Description
2. Development of Problem Statement (Requirements Assessment)
  - 2.1 Background Information on Greenacres After School Care (Happy Days)
  - 2.2 Initial Problem
  - 2.3 Research on problem – An Ethnographical Analysis of the Current Situation
    - 2.3.1 Requirements Identified from Analysis
      - 2.3.1a The analysis of Business Processes (included)
      - 2.3.1b The analysis of Documents and Information Sharing (included)
      - 2.3.1c The analysis of information from Interviews (included)
  - 2.4 Assumptions (included)
3. Project Specifications
4. Possible Solutions
  - 4.1 Existing Alternatives (included)
  - 4.2 Solutions Generated by the Author (included)
    - 4.2.1 Microsoft Access Database (included)
    - 4.2.2 Microsoft SQL Server Database (included)
    - 4.2.3 Web-based Solution (included)
    - 4.2.4 Spreadsheet-based Solution (included)
    - 4.2.5 Access Database and Spreadsheet Modules (included)
5. Evaluation of Solutions
6. Feasible Solutions
7. Chosen Solution
8. Other Issues to be Addressed (included)
  - a. Safety Issues (included)
  - c. Legal Issues
9. Gantt Chart
10. Conclusion (included)
11. References (included)

**The full report was 40 pages long and was completed on 9<sup>th</sup> February 2005.**

## **Executive Summary**

This report assesses the feasibility of providing a solution to the problems presented by the paper based file system of Greenacres After School Care (Happy Days).

The problems concerning the paper based system and the amount of work involved in maintaining it are considered, and a problem statement is developed.

These problems provide the basis for creating goals and requirements that the solution should meet if it were the ideal solution.

Existing solutions and the system designs created by the author are then explained and evaluated in terms of their technical, economic, legal, social and economic feasibility.

Feasible solutions from this evaluation are then explained and considered in more detail in terms of how well they meet the goals and requirements of the ideal solution and the expected costs and tasks that must be accomplished to implement that solution.

A solution has then been recommended by the author taking into account all analysis and other factors, and further justification has been provided of how well the recommended solution meets the ideal goals and requirements.

A time schedule and list of issues to be addressed when implementing this solution have also been detailed.

The report concludes with an identification of the accomplishments made so far and the major hurdles remaining to be passed to make the project successful.

### 2.3.1 Requirements Identified from Analysis

#### 2.3.1a *The analysis of Business Processes*

Analysis of the business processes seen in the analysis report and the process flow diagram has led to the identification of a number of potential business process problems. These problems and the processes they relate to are described below.

Problem ID	Problem	Related Process(es)	Implications of Problem
P1	Time and manpower for updating contact record cards	1.6	<ul style="list-style-type: none"> <li>• Contact cards might not be up to date when needed</li> <li>• May not be the staff available to update the cards</li> <li>• Staff that should be looking after children are tied up in updating the cards</li> </ul>
P2	Two different payment processes	3.3, 3.2	<ul style="list-style-type: none"> <li>• Keeping two different payment systems up to date is time consuming</li> <li>• May be that payment books are not always up to date</li> <li>• May forget to record a payment or record tuck spending or fees for a child</li> <li>• May be disputes over the fees due</li> <li>• May be disputes over how much a child has eaten for tuck- parents may be unwilling to pay</li> </ul>
P3	School tickets and registers sometimes do not correlate	1.1, 4.1, 4.2, 1.2	<ul style="list-style-type: none"> <li>• Lead to confusion when taking and picking up children from school, as in the numbers of children that are being picked up/dropped off</li> <li>• May miss a child to take to school as not filled in on register and so crossed off school ticket</li> </ul>
P4	No formal rules for signing in/out of staff and visitors	1.11, 3.1	<ul style="list-style-type: none"> <li>• Staff and visitors forget to sign in and out</li> <li>• May result in difficulty calculating hours in case of staff sign in</li> <li>• Regulation states visitors must sign in</li> </ul>

Problem ID	Problem	Related Process(es)	Implications of Problem
P5	Must check daily changes book and make changes to the various documents regularly	1.1, 1.2, 1.4, 1.7, 1.8	<ul style="list-style-type: none"> <li>• All information is not guaranteed to be in the daily changes book</li> <li>• Cross checking daily changes book with all other documents is time consuming</li> <li>• May be errors in transcription</li> <li>• May have to search way back into book to find information that needs to be updated for today- some information may be missed</li> </ul>
P6	Multiple registers for B&A children	1.1, 1.2	<ul style="list-style-type: none"> <li>• Children might not be ticked off on the register and subsequently not on school tickets</li> <li>• Creates confusion between staff and managers as to who is in and who isn't</li> <li>• May lead to payment disputes identified in P2</li> <li>• Leads to confusion between timings registers and simple in and out registers</li> <li>• If times not recorded properly (due to confusion in registers/ finding registers etc.) in the event of fire it may not be realised that some children may still be in the setting at the time of fire</li> </ul>
P7	Planning early learning goals is time consuming and complicated	2.6	<ul style="list-style-type: none"> <li>• Activities may not be planned in time for the playgroup sessions</li> <li>• Not keeping up to scratch with the planning of goals and providing evidence of the activities done may result in the loss of the free places funding</li> </ul>
P8	Problems filing documents effectively for five years	2.7	<ul style="list-style-type: none"> <li>• Current filing system disorganised, how organised is previous years documentation?</li> <li>• Auditing of these documents may be required and if documents are messy or cannot be found it will reflect badly on the business</li> </ul>
P9	Weekly preparation of registers	1.7, 1.8	<ul style="list-style-type: none"> <li>• Registers may not be prepared in time</li> <li>• Registers may not be properly updated (P5)</li> </ul>

### 2.3.1b *The analysis of Documents and Information Sharing*

Analysis of the different documents produced and how these documents were shared along with identification of intangible information passed between people related to the business provided insight into a number of potential information handling problems of the business. These potential problems and the information sources they relate to are described below.

Problem ID	Problem	Implications of Problem
D1	Information duplicated	<ul style="list-style-type: none"> <li>• Information updated in one document may not be updated in another document even though it should be</li> </ul>
D2	Documents are handwritten	<ul style="list-style-type: none"> <li>• Not everyone may be able to read the handwriting</li> <li>• Handwriting documents is time consuming</li> <li>• Handwritten documents can seem messy and disorganised</li> </ul>
D3	Photocopies are of poor quality	<ul style="list-style-type: none"> <li>• Photocopies may not be legible to all staff</li> <li>• Original copies may be lost and so poorly printed photocopies continue to be made</li> </ul>
D4	No backup of documents in the event of fire/burglary	<ul style="list-style-type: none"> <li>• Documents are completely lost and managers have to start from scratch</li> <li>• Business could not continue without the documents</li> </ul>
D5	Time consuming	<ul style="list-style-type: none"> <li>• Producing and maintaining documents is eating into managers home time</li> <li>• Producing documents takes so long they may not be completed in time for when they are needed</li> </ul>
D6	Not immediately apparent what documents are/how they work	<ul style="list-style-type: none"> <li>• New staff members will have to be fully 'shown the ropes' of getting to know what documents are and how they are used/produced</li> <li>• In particular, if a new staff member is unfamiliar with children they will not be able to identify the School tickets</li> </ul>
D7	Giving notices to parents verbally (Process 1.10)	<ul style="list-style-type: none"> <li>• Not all parents receive all of the information</li> <li>• Complications in remembering what information has been told to whom</li> </ul>

Problem ID	Problem	Implications of Problem
D8	Forgetting parents who have requested a holiday placement (verbally)	<ul style="list-style-type: none"> <li>• Holiday place may no longer be available for the child by the time the request has been remembered</li> <li>• Loss of faith in the business by the parent</li> </ul>
D9	Duplication of payment documents because of two different payment processes	<ul style="list-style-type: none"> <li>• Information stored more than once- update problem</li> <li>• Parents may be uncertain for what they have paid for</li> <li>• Managers may be uncertain of what parents have paid for</li> <li>• May result in dispute over how much needs to be paid for in relation to Tuck and fees</li> </ul>
D10	Rewriting information from different documents (working documents to stored documents)	<ul style="list-style-type: none"> <li>• May produce errors on transcription</li> <li>• Too time consuming</li> </ul>
D11	No formal rules for signing in/out of staff and visitors	<ul style="list-style-type: none"> <li>• Staff and visitors forget to sign in and out</li> <li>• May result in difficulty calculating hours in case of staff sign in</li> <li>• Not conforming to regulation if visitors do not sign in</li> </ul>
D12	Spoken Information is forgotten to be used to update various tickets (Processes 1.1, 1.2, 4.1, 4.2)	<ul style="list-style-type: none"> <li>• May result in staff waiting at school to pick up a child that has already been picked up by a parent</li> <li>• May result in staff not picking up a certain child from school</li> </ul>



### 2.3.2c *The analysis of information from Interviews*

Information provided from interviews and noted by the ethnographer during observation led to the generation of a rich picture depicting the current situation and conflict areas that occur within it. Each of the conflict areas and the potential problems arising from this rich picture are described below.

Problem ID	Problem	Conflict Area	Implications of Problem
IN1	Uncertainty regarding who is picking up children	Schools think bubble	<ul style="list-style-type: none"> <li>• Schools are uncertain about who is supposed to be picking up child- child sent off with a stranger?</li> <li>• Children may be left at school with no-one to go home with</li> <li>• Schools have to inform staff that a child has already been picked up</li> </ul>
IN2	Trust issues with accountant	Between managers and accountants	<ul style="list-style-type: none"> <li>• If cannot trust accountant, are they handling money correctly?</li> <li>• Loss of money</li> <li>• Incorrect accounts being produced</li> <li>• Not producing accounts according to legislation</li> </ul>
IN3	Ambiguity about recording Tuck	Staff think bubble	<ul style="list-style-type: none"> <li>• Do not document children's tuck consumption correctly</li> <li>• Parents may be unwilling to pay</li> </ul>
IN4	Uncertainty regarding up to date School Tickets	Staff think bubble	<ul style="list-style-type: none"> <li>• Children may not be picked up from school by staff</li> <li>• Staff may be waiting for a child that has already been picked up by parents</li> </ul>
IN5	Filing system is disorganised	Conflicts relating to file system; Manager think bubble	<ul style="list-style-type: none"> <li>• Cannot find information easily</li> <li>• Cannot access documents if needed</li> <li>• Information is not recorded in time as documents could not be found</li> <li>• Information is forgotten to be added as document wasn't found at the time</li> </ul>

Problem ID	Problem	Conflict Area	Implications of Problem
IN6	Documentation takes too much time	Manager think bubble	<ul style="list-style-type: none"> <li>• Producing and maintaining documents is eating into managers home time</li> <li>• Documents not made to scratch/done at all because of lack of time</li> </ul>
IN7	No formal policy on the amount of notice staff give before having days off; No formal procedure for organising replacement staff; No formal procedure for noting which staff are off when	Observation	<ul style="list-style-type: none"> <li>• Managers and other staff have to cover at short notice- reduce employee morale</li> <li>• Not enough staff to look after the children (child to staff ratio)</li> <li>• May be disputes in pay if not documented which staff are off when</li> <li>• May mean the staff who fill in do not have correct qualifications to be looking after children- what if random inspection occurred?</li> </ul>
IN8	Keeping registers up to date	Supervisor think bubble	<ul style="list-style-type: none"> <li>• Children are missed off the registers</li> <li>• Impromptu adding of children one week may still mean they are missed off in further weeks</li> </ul>
IN9	Staff do not always sign themselves in and out	Managers concern (not drawn)	<ul style="list-style-type: none"> <li>• Calculating the number of hours a member of staff has worked is difficult</li> <li>• There may be pay disputes between staff and managers</li> </ul>
IN10	Forgetting to write things down/forgetting to do things	Managers/ Supervisor concern (not drawn)	<ul style="list-style-type: none"> <li>• Information does not get updated</li> <li>• New information does not get added to documents</li> <li>• Do not conform to regulations</li> <li>• Children get overlooked</li> </ul>
IN11	Would like a computer on premises	Managers concern (not drawn)	<ul style="list-style-type: none"> <li>• Children do not get to learn about IT</li> <li>• Managers have to print out all documents and are entirely paper-based whilst at the setting</li> </ul>

All of these problems can be aggregated to provide a clear statement of the problem:

Greenacres encounter a number of issues when conducting their day to day business. The problems arise from the underlying time management issues and disorganised filing issues. The issues of time affect how much documentation can be provided relating to the business as well as how up to date business documents can be kept. Due to lack of time business documents may also occasionally fail to meet the regulatory standards until the managers have more time to spend on them.

The filing issues also mean that documents may fail to be updated instantly and so a reliance on managers and other staff member's memory is created. This poses problems as if critical information is not remembered it could lead to the overlooking of a child and the possibility of poor child care.

The problems of data duplication and unnecessary rewriting of data also occur in the current filing system, as many documents contain the same pieces of data. Duplicated data creates the problem of updating a piece of information in numerous documents and the rewriting of data creates further problems in terms of transcription errors.

## **2.4 Assumptions**

The assumptions I have made relate to the project as a whole as well as to the nature of the problem:

- The maximum amount the managers are willing to spend on the project is £400
- The managers have access to a desktop PC
- The managers are willing to learn how to use the solution and their computer effectively
- The managers would take up the offer of free milk if they could find the time to do the paperwork
- The managers are willing to change some of the business processes if necessary to adopt the proposed new system

## **4. Possible Solutions**

There are a number of existing products available that use technology to facilitate the running of day care businesses. Below is a list of these alternative products with a brief description of the functions that they can provide to day care business such as Greenacres.

A number of bespoke solutions have also been designed by the author that take into account the specifics of the business problems, whereas existing products are generic in nature. These are described in section 4.2.

#### 4.1 Existing Alternatives

<p><b>ABC Software</b></p> <p>This software was developed in Microsoft Access by RW Communications Ltd, a medium-sized UK based company (unlike ProCare below). Some of the functionalities of this software include:</p> <ul style="list-style-type: none"> <li>• Address information for each parent</li> <li>• Childs details per parent</li> <li>• A find facility - Find by Childs name, parents name, address, postcode, telephone number etc.</li> <li>• Religion, marital status</li> <li>• Doctor's details for each child</li> <li>• Medication for each child</li> <li>• Emergency contacts</li> <li>• Logging all types of allergies</li> <li>• Responsible parties</li> <li>• Timetables</li> <li>• Reporting system producing over 15 different reports</li> <li>• System security - Password protected</li> <li>• Invoicing system - Generating weekly invoices and statements</li> <li>• Payment area for invoices being paid. Logging all invoices</li> </ul>	<p><b>KinderSoft</b></p> <p>KinderSoft is a piece of software produced by Showcase Computer Systems in the UK. It claims that it will:</p> <ul style="list-style-type: none"> <li>• Automate the management of your nursery</li> <li>• Store all of your child/parent details <ul style="list-style-type: none"> <li>◦ Including emergency contacts, doctor details, medical record, dietary information, allergies and more</li> </ul> </li> <li>• Manage bookings and waiting lists <ul style="list-style-type: none"> <li>◦ By specifying start dates and end dates and the type of session required</li> </ul> </li> <li>• Provide an instant forecast of population levels <ul style="list-style-type: none"> <li>◦ How many children attend each session or are in different rooms</li> </ul> </li> <li>• Provide different types of registers</li> <li>• Automate your invoicing procedure <ul style="list-style-type: none"> <li>◦ Including handling grant information and other government vouchers, and pricing on any of a range of pricing schemes (e.g. child, room etc.)</li> </ul> </li> <li>• Diarise birthdays, new arrivals etc</li> <li>• Provide Staff management <ul style="list-style-type: none"> <li>◦ Including recording staff details, employment dates, shift working, worker status, qualifications, holiday and sickness records to make payroll calculations easy</li> </ul> </li> <li>• Help your nursery meet OFSTED requirements</li> </ul>
--	--

<p><b>ProCare Child Care Centre Management Software</b></p> <p>This software is used by 12,000 nurseries, childcare centres and care providers worldwide. It has a modular format, allowing you to pick the business functions that you require to operate efficiently. The different modules include:</p> <ul style="list-style-type: none"> <li>• Family Data and accounting</li> </ul> <p>This module allows you to keep all the information about the children attending the centre, it has an attendance tracker to track children and staff, and it can help to deal with fee charges and grants.</p> <p>There is also the option to purchase the Pocket Attendance software for PDA's so emergency information and information about children's checking in times can all be taken out of the building in an emergency.</p> <p>There is also the option for running a photo gallery of the children and maintaining a food program for the children.</p> <ul style="list-style-type: none"> <li>• Employee Data</li> </ul> <p>This module handles all the information about the employees of the business, including scheduling to keep track of when they are off on sick or holiday.</p> <ul style="list-style-type: none"> <li>• Accounting Software</li> </ul> <p>This module deals with the financial side of the business that is paying bills and other expenses and looking at the total balance for the business.</p> <p>There are further modules available that look at child to staff ratios and immunisation requirements</p>	<p><b>Orgamation- iCare</b></p> <p>Orgamation provides a management software package specifically designed for child care centres, and preschools known as iCare. The functionalities include enrolment, scheduling, staffing, billing, accounting, financials, time and attendance, food program, waiting list, children and staff reviews and drop-in centres.</p> <p>iCare is based on their DCMS 9003 technology which allows you to create your own tables fields forms and reports and configure the interface you are working with also.</p> <p>It allows a children's database, contact database, family database and staff database to be kept with all the required data inside them.</p> <p>It provides functions for recording attendance including checking in and out times for children and allows scheduling of future enrolments and staff requirements.</p> <p>It can deal with a number of accounting needs such as staff payroll, bill payment and fee charging.</p> <p>It can also generate a number of reports for managers, staff and parents to use.</p> <p>If needed it can also provide functions for planning mealtimes.</p>
---	---

## **OakTree Nursery Manager**

OakTree Nursery Manager is a piece of software developed by ActiveCode Ltd to provide a simple way of managing the nursery efficiently. Some of the functionalities of this software include:

- *Session Details*

Specify a number of different session e.g. Playgroup Holiday etc. and how many children can attend. Generate a waiting list for each session

- *Child Details*

Details of each child including name, address, date of birth, sex, religion, discount, initial deposit paid, and any freehand notes.

- *Classes*

Showing the sessions that the child has been included in.

- *Related Adults*

Each child can be related to a number of adults.

- *Documentation*

Various reports such as invoices, child details, outstanding invoices, milk report, registers and simple lists such as a list of children

- *Security*

Encrypted database, restricted access to the data, stop children's addresses from being shown in children's details section

- *Adult Details*

Details of the adults including full name, home address, work address and relationships with associated children e.g. parent, carer, grandparent.

- *Adjustments*

Any discounts for specified sessions.

- *Holidays*

Holiday periods can be recorded.

- *Medical*

Various food and health allergies can be specified here for the child.

- *Milk Claim*

Record daily price of milk and number of children who qualify for free milk for that day.

## **4.2 Solutions Generated by the Author**

The following solutions have been proposed to take into account the project specifications and the analysis. The existing alternatives were also considered when generating these solutions. These possible solutions have been explained in terms of the technical resources that would be used to generate the solution and some of the key IT functionalities they may provide.

### **4.2.1 Microsoft Access Database**

#### **Software Capabilities**

Microsoft Access is a simple to use database application. It provides a solution to the problems as it has a number of functions that can be used to store, process, and maintain information that can be used everyday by the business. Using the principles of a database management system, information can be firstly stored within the application. Forms generated by Access can be used to do this. Using Access' report functions, a number of various documents could also be generated, about children and contact details etc. using the stored information.

#### **Hardware Possibilities**

An application developed in Microsoft Access can be used on a Desktop PC or Laptop.

### **4.2.2 Microsoft SQL Server Database**

#### **Software Capabilities**

Microsoft SQL is a similar solution to Microsoft Access. Microsoft SQL however, has more functions and allows greater flexibility when it comes to designing a solution. Its data and user interface can be designed separately from each other. SQL Server also allows the information to lie on a networked PC separately from other PC's and so could prove useful in terms of backup.

#### **Hardware Possibilities**

A solution developed in Microsoft SQL Server can be run on a Desktop or Laptop and can run through a network so a number of people could be using the database at the same time and backups of the data can be made remotely.

### **4.2.3 Web-based Solution**

#### **Software Capabilities**

A web-based solution will involve the development of an underlying database. This database would most likely be implemented using MySQL. The web pages would be produced using ASP that would link back to the MySQL database where the information would be stored. Secure login features could be incorporated in the online system so users may login and work on one central system.

### **Hardware Possibilities**

The solution would require a central server (this could be a PC) which is on all the time and from which the information can be accessed. A web-based solution would allow users to connect and work with the information from any PC as long as they had an Internet connection. The central server on which the database sits would have to be connected to the Internet all the time.

#### **4.2.4 Spreadsheet-based Solution**

##### **Software Capabilities**

Microsoft Excel is a simple to use spreadsheet application. It contains a variety of functions, including the ability to produce charts and graphs and create macros to perform calculations. Its tabular format means data can be entered and extracted for use according to its cell reference. This software would make the generation of accounts particularly easy for the organisation.

##### **Hardware Possibilities**

Microsoft Excel may be used on a PC or laptop. A simpler version of Microsoft Excel is also available for handheld PDA's increasing the portability of the application to something that fits into the palm of your hand.

#### **4.2.5 Access Database with Spreadsheet Modules**

##### **Software Capabilities**

Combining the functionalities of both databases and spreadsheets will allow the most to be made out of both these applications and the functionalities sectioned into the software that would provide the best abilities, for example. The accounting needs could be handled by a spreadsheet where the storing of textual information such as children's details could be done by the database application.

##### **Hardware Possibilities**

Using spreadsheets again opens up the possibility of using PDA's to perform some functions for the organisation, for example storing emergency contact information and acting as a digital school lists. The database and other spreadsheet modules can be used and accessed from a PC or laptop as before.

## **8. Other Issues to be addressed**

### ***a. Safety Issues***

The safety issues surrounding the development and use of an IT solution are those such as ensuring that the PC or laptop is in a secure place away from children during its use at the setting. Wires must be tidied away so no one may trip over them. Issues such as these are also highlighted in the National Standards stating that the setting must be a safe environment for the children to play in. There are also



health issues regarding the use of PC's and laptops over long periods of time, such as Repetitive Strain Injury and eye- strain and other ergonomic considerations.

## **10. Conclusion**

The essential accomplishments achieved so far for the project are the complete full analysis of the current situation, and (through this report) the identification of core business problems and other factors defining the creation of a solution. Basic design plans have also already been drawn out for the chosen solution.

The next major hurdle is to create a full design specification for the chosen solution and to use this design specification to create a prototype that the managers can use to facilitate the day to day running of the business.

## **11. References**

### **Existing Solutions:**

ProCare Software, 2003-2004

URL: <http://www.procaresoftware.co.uk/> [Accessed: 6<sup>th</sup> February 2004]

Orgamation, 2003

URL: <http://www.orgamation.com/> [Accessed: 6<sup>th</sup> February 2004]

KinderSoft, 2002-2004

URL: <http://www.kindersoft.co.uk/default.aspx> [Accessed: 6<sup>th</sup> February 2004]

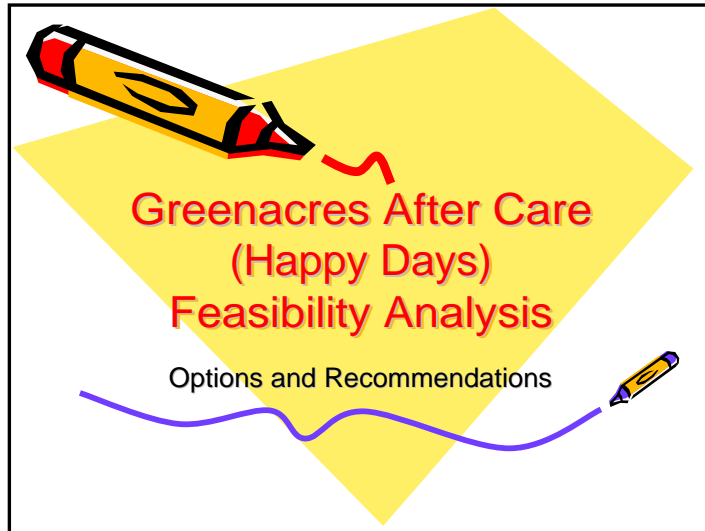
OakTree Nursery Manager

URL: <http://www.activecode.co.uk/oaktree2.htm> [Accessed: 6<sup>th</sup> February 2004]

ABC Software

URL: <http://www.abcsoftware.co.uk/welcome.htm> [Accessed: 6<sup>th</sup> February 2004]

## Appendix H – Presentation Slides



### Feasibility Analysis

- What is it?
  - Formally identify problem
  - Identify requirements of the ideal solution
  - Look at possible solutions and evaluate them
  - Choose the best solution
  - Discuss where to go next

Produce a Feasibility Report!!

10 February, 2005

3

This slide has a yellow crayon in the top right corner and a blue squiggle line extending downwards. In the bottom left corner, there are three small crayons (yellow, green, and red) and the date '10 February, 2005'. The number '3' is in the bottom right corner.

### Project Overview

- What is the aim of this project?
- How will it be done?
- Where are we now?
  - Project Definition
  - Analysis
  - Feasibility Analysis ←

10 February, 2005

2

This slide has a yellow crayon in the top right corner and a blue squiggle line extending downwards. In the bottom left corner, there are three small crayons (yellow, green, and red) and the date '10 February, 2005'. The number '2' is in the bottom right corner. A blue arrow points to the 'Feasibility Analysis' item in the list.

### Feasibility Report - 1. Project Description

- Why's and how's of project
  - Describing the aim of the project
  - Describing how the project will be done
  - How we started this presentation!

10 February, 2005

4

This slide has a yellow crayon in the top right corner and a blue squiggle line extending downwards. In the bottom left corner, there are three small crayons (yellow, green, and red) and the date '10 February, 2005'. The number '4' is in the bottom right corner.

## Feasibility Report- 2. Problem Statement

- Initial Problem
  - Identified by Krishna
    - Files Disorganised
    - Are documents conforming to regulation?
  - Identified by You
    - Time Constraints
    - Workload
    - Computer Literacy



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## Feasibility Report- 2. Problem Statement

- Problem Identification
  - Identifying problems from looking at processes
  - Problems identified when looking at documents
  - Problems identified by you!!



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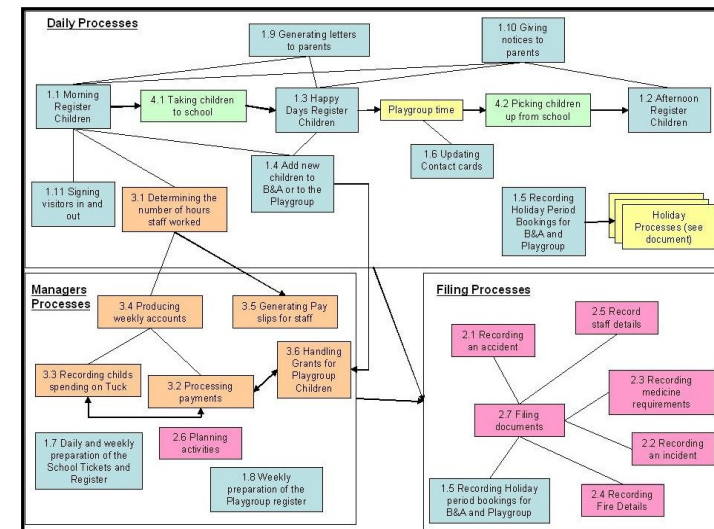
## Feasibility Report- 2. Problem Statement

- Research on Problem
  - Ethnography Analysis
    - Two sessions of analysis
    - One interview/discussion session on the information collected
    - Approval given of collected information allowing identification of problems to commence



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## Feasibility Report- Problem Statement

- Problem Identification
  - Problems identified when looking at processes
    - A lot of problems!
    - The Good News:
      - Some of these processes, such as the basic recording processes, are fine and just need to be transferred to a computerised system!

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## Feasibility Report- Problem Statement

- Problem Identification
  - Problems identified by you (rich picture)
    - Too time consuming
    - Problems with ensuring the children at the setting are actually marked down on the various lists as present
    - Messy file system
    - Would like a computer on premises
    - Trust issues with accountant
    - Problems with recording Tuck
    - Uncertainty regarding picking up children
    - Staff do not always sign themselves in and out
    - Staff time off arrangements

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## Feasibility Report- Problem Statement

- Problem Identification
  - Problems identified when looking at documents
    - Information Duplication
      - Information stored more than once
      - Information rewriting
    - Handwritten (Legible?)
    - Photocopies
    - No backup in the event of fire/burglary
    - Time Consuming
    - Not immediately apparent what documents are/ how they work
    - 2 separate payment systems mean twice the amount of pay information stored
    - No rules for signing in and out of staff members and visitors
    - Giving notices to parents verbally
    - Forgetting to update school tickets
    - Forgetting to update holiday placement spaces list

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## Feasibility Report- Problem Statement

- The BIG Picture
  - Number of issues when conducting day to day business
    - Problems arise from:
      - time management issues
      - disorganised filing issues
  - Time issues affect:
    - how much documentation can be provided
    - How up to date business documents can be kept
    - Whether documents meet the regulatory standards
  - Filing issues mean:
    - Documents may fail to be updated instantly
      - a reliance on managers and other staff member's memory
      - Poses problems as if critical information is not remembered it could lead to the overlooking of a child and the possibility of poor child care.
    - Data duplication and unnecessary rewriting of data
      - Duplicated data means updating a piece of information in numerous documents
      - Rewriting of data creates further problems in terms of transcription errors.

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## Feasibility Report- Problem Statement

- Assumptions
  - The maximum amount the managers are willing to spend on the project is £400
  - The managers have access to a desktop PC
  - The managers are willing to learn how to use the solution and their computer effectively
  - The managers would take up the offer of free milk if they could find the time to do the paperwork
  - The managers are willing to change some of the business processes if necessary to adopt the proposed new system



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## Feasibility Report- Project specification

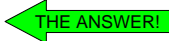
- The Ideal Solution
  - Some of the goals outlined in report
    - Record the different education learning goals and associated activities and templates
    - Enter details about each of the different adults associated to a child and their contact details
    - Store details about whether a child is eligible for a grant or not and for how many terms
    - Record on the generated registers the times that children come in to the sessions
    - Timetable the different education learning goals and activities into daily and weekly playgroup sessions
    - Schedule when different staff are due to be off on holiday or are off sick
    - Producing school tickets automatically from filling in the register
    - Generate a register of children attending the different sessions automatically for each week
    - One integrated payment system
    - Calculate money that has gone into and come out of the business each week to give the balance of the cash box
    - Make regular backups of all the information in case of theft or burglary
    - Provide passwords to make the information more secure



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## Feasibility Report- Project specification

- We have all these problems, but what do we want for our solution?
- Project Specification 
  - Goals that if met would solve the problems
  - The IDEAL solution



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## Feasibility Report- Possible Solutions

- First, let us consider the existing solutions:
  - ABC Software
  - KinderSoft
  - ProCare Child Care Centre Management Software
  - Orgamation- iCare
  - OakTree Nursery Manager



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## Feasibility Report- Possible Solutions

- My possible developed solutions:
  - Microsoft Access Database
  - Microsoft SQL Server Database
  - Web-based Solution
  - Spreadsheet Based Solution
  - Access Database and Spreadsheet modules



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## Feasibility Report- Evaluation of solutions

- Microsoft Access Database
- Microsoft SQL Server Database
- Web-based Solution
- Spreadsheet Based Solution
- Access Database and Spreadsheet modules



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## Feasibility Report- Evaluation of solutions

- Evaluate the solutions based on TELOS
  - Technical feasibility
  - Economic Feasibility
  - Legal feasibility
  - Organisational Feasibility
  - Social Feasibility
- Give reasons for accepting and rejecting each of the possible solutions



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## Feasibility Report- Feasible solutions

- Provide a more detailed evaluation of the two accepted solutions
  - Evaluate the solutions against the ideal solution goals
  - Establish the tasks to be accomplished and the cost and time estimates



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## Feasibility Report- Feasible solutions

- Microsoft Access Database
  - Cost Estimate:
    - » Backup costs: £20.00 - 60.00
    - » Printing costs: ongoing ink cartridge costs: @15.00 per month
  - Time Estimate: 4 weeks to complete
  - Key Tasks:
    - Develop a full design specification
    - Make 'the bones' of the application
    - Fill application with data
    - Test application
    - Hand over and train end users
    - Feedback and modification
  - Evaluation Against Goals: See Notes



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## Feasibility Report- Chosen Solution

- Access Database
  - Although using a PDA for emergency functions would be good, just not feasible and may not see the benefits
  - Still keep some paper that staff are familiar with and makes the solution less technical (and less costly!)



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## Feasibility Report- Feasible solutions

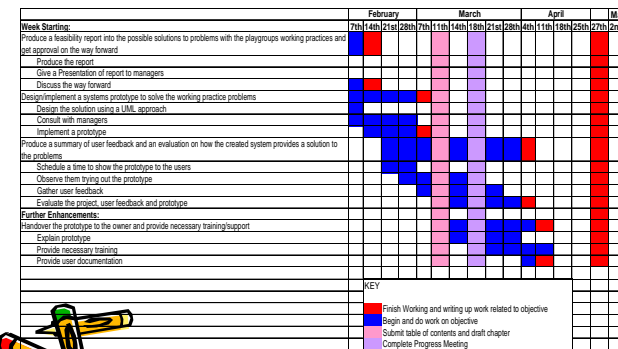
- Access Database and Spreadsheet modules
  - Cost Estimate:
    - » If purchasing PDA, @£300
    - » Backup costs: £20.00 - 60.00
    - » Printing costs: ongoing ink cartridge costs: @15.00 per month
  - Time Estimate: 4 weeks to complete
  - Key Tasks:
    - Develop a full design specification
    - Purchase hardware if necessary
    - Make 'the bones' of the application
    - Fill application with data
    - Test application
    - Hand over and train end users
    - Feedback and modification
  - Evaluation Against Goals: See Notes



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## Feasibility Report- Gantt Chart



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## Feasibility Report- Conclusion

- The essential accomplishments achieved so far for the project are the complete full analysis of the current situation, and (through this report) the identification of core business problems and other factors defining the creation of a solution. Basic design plans have also already been drawn out for the chosen solution.
- The next major hurdles are to decide on the most important specifications to model, create a full design specification for the chosen solution and to use this design specification to create a prototype that the managers can use to facilitate the day to day running of the business.

Now Its Your Turn To Decide!!

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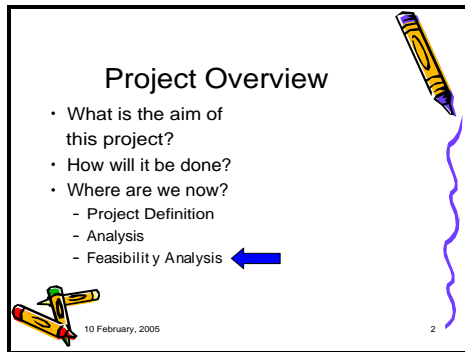
25



## Appendix I – Presentation Handout

### Feasibility Presentation- Notes to the Slides

Date: 11<sup>th</sup> February 2005  
Presented by: Gemma Snowden



#### Slide 2- Project Overview

##### **Aim**

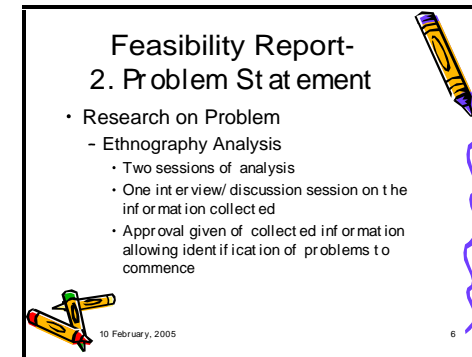
The aim of the project is to identify the opportunities in using IT for improving the work practice and information management involved in running Greenacres After School Care (Happy Days).

##### **How it will be done**

Applying SSM and ethnography in the investigation to improve the quality of the recommendation.

Designing a solution with the use of UML techniques and create a prototype to hand over to the end users.

Evaluation of the effectiveness of this prototype will conclude the project.



#### Slide 6- Problem Statement

##### **Ethnography Analysis**

The research objectives of the ethnography analysis session were to better understand the current situation of the business, by identifying the current processes that occur in the day to day running of the business, the weekly processes that occur and some long term processes.

Documents that are created and/or used by the business and the people involved in any and all stages of the business cycle were also identified.

The documents and processes were then further analysed to determine the types of information and data that are used in the business and how, when or if it is stored.

Analysis of how the people involved in the business interact with one another and share information was also conducted.

The session was structured to include two interview sessions and two ethnographical observation sessions, one for observing the morning and playgroup session, and one for observing the afternoon session. Following the initial session, a process diagram was drawn of the current situation to depict how the processes fit together to form the business structure and a rich picture was drawn to identify some of the conflicts and problems occurring within the business that had been identified by managers and staff during the interview session.

### Problems Identified when looking at Processes and the Implications of these problems on the business

- Contact cards might not be up to date when they are needed
- May not be the staff available to update the cards
- Staff that should be looking after children are tied up in updating the cards

- Keeping two different payment systems up to date is time consuming
- May be that payment books are not always up to date
- May forget to record a payment or record tuck spending or fees for a child
- May be disputes over the fees due if children were not there
- May be disputes over how much a child has eaten for tuck- parents may be unwilling to pay

Children might not be ticked off on the register and subsequently not on school tickets  
Creates confusion between staff and managers as to who is in and who isn't  
May eventually lead to payment disputes as identified in P2  
Leads to confusion between timings registers and simple in and out registers  
If times not recorded properly (due to confusion in registers/ finding registers etc.) in the event of fire it may not be realised that some children may still be in the setting at the time of fire

Lead to confusion when taking and picking up children from school, as in the numbers of children that are being picked up/dropped off  
May miss a child to take to school as not filled in on register and so crossed off school ticket

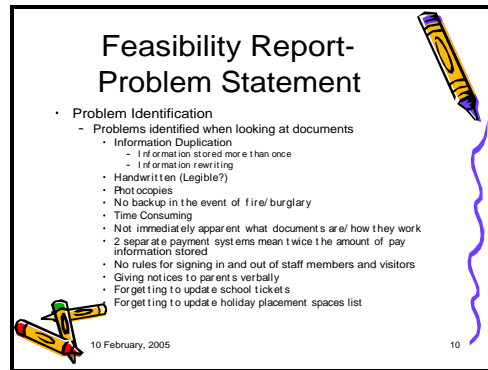
All information is not guaranteed to be in the daily changes book  
Cross checking daily changes book with all other documents is time consuming  
May be errors in transcription  
May have to search way back into book to find information that needs to be updated for today- some information may be missed

Staff and visitors forget to sign in and out  
May result in difficulty calculating hours in case of staff sign in  
Not conforming to regulation if visitors do not sign in

Activities may not be planned in time for the playgroup sessions  
Not keeping up to scratch with the planning of goals and providing evidence of the activities done may result in the loss of the free places funding- bad for business

Current filing system disorganised, how organised is previous years documentation?  
Auditing of these documents may be required and if documents are messy or cannot be found it will reflect badly on the business

Registers may not be properly updated (P5)



### **Slide 10- Problem Statement**

#### **Problems Identified when looking at Documents and the Implications of these problems on the business**

##### ***Information Duplication***

Information stored more than once

Information updated in one document may not be updated in another document even though it is the same information

##### ***Information rewriting***

May produce errors on transcription

Too time consuming

##### ***Handwritten (Legible?)***

Not everyone may be able to read the handwriting

Handwriting documents is time consuming

Handwritten documents can seem messy and disorganised

##### ***Photocopies***

Photocopies may not be legible to all staff

Original copies may be lost and so poor print photocopies continue to be made

##### ***No backup in the event of fire/burglary***

Documents are completely lost and managers have to start from scratch

Business could not continue without the documents

##### ***Time Consuming***

Producing and maintaining documents is eating into managers home time

Producing documents takes so long they may not be completed in time for when they are needed

##### ***Not immediately apparent what documents are/how they work***

New staff members will have to be fully 'shown the ropes' of getting to know what documents are and how they are used/produced

In particular, if a new staff member is unfamiliar with children they will not be able to identify the School tickets

##### ***Two separate payment systems mean twice the amount of pay information stored***

Information stored more than once, causing update problems

Parents may be uncertain for what they have paid for

Managers may be uncertain as to what parents have paid for

May result in dispute over how much needs to be paid for in relation to Tuck and fees

##### ***No rules for signing in and out of staff members and visitors***

Staff and visitors forget to sign in and out

May result in difficulty calculating hours in case of staff sign in

Not conforming to regulation if visitors do not sign in

##### ***Giving notices to parents verbally***

Not all parents receive all of the information

Complications in remembering what information has been told to whom

##### ***Forgetting to update school tickets***

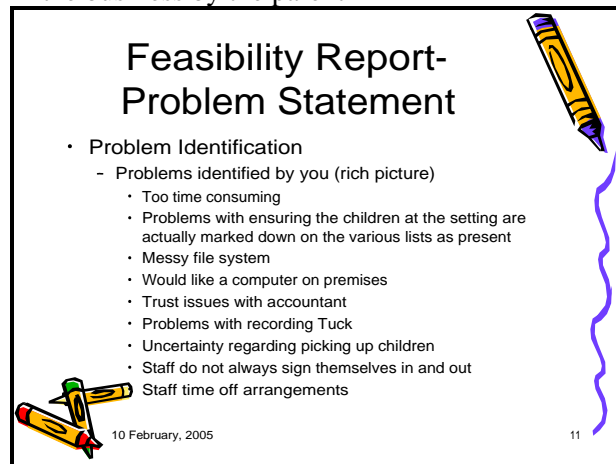
May result in staff waiting at school to pick up a child that has already been picked up by a parent

May result in staff not picking up a certain child from school

##### ***Forgetting to update holiday placement spaces list***

Holiday place may no longer be available for the child by the time the request has been remembered

Loss of faith in the business by the parent



### Slide 11- Problem Statement

**Problems Identified when by You (rich picture) and the Implications of these problems on the business**

#### ***Too time consuming***

Producing and maintaining documents is eating into managers home time  
Documents not made to scratch/done at all because of lack of time

#### ***Problems with ensuring the children at the setting are actually marked down on the various lists as present***

Children are missed off the registers

Impromptu adding of children one week may still mean they are missed of in further weeks

Children may not be picked up from school by staff

Staff may be waiting for a child that has already been picked up by parents

#### ***Messy file system***

Cannot find information easily

Cannot access documents if needed

Information is not recorded in documents because they could not be found in time

Information is forgotten to be added as document wasn't found at the time

#### ***Would like a computer on premises***

Children do not get to learn about IT

Managers have to print out all documents and are entirely paper-based whilst at the setting

#### ***Trust issues with accountant***

If cannot trust accountant, are they handling money correctly?

Loss of money

Incorrect accounts being produced

Not producing accounts according to legislation

#### ***Problems with recording Tuck***

Do not document children's tuck consumption correctly

Parents may be unwilling to pay

#### ***Uncertainty regarding picking up children***

Schools are uncertain about who is supposed to be picking up child- child sent off with a stranger?

Children may be left at school with no-one to go home with

Schools have to inform staff that a child has already been picked up

Forgetting to do things- Information does not get updated

New information does not get added to documents

Do not conform to regulations

Children get overlooked

#### ***Staff do not always sign themselves in and out***

Calculating the number of hours a member of staff has worked is difficult

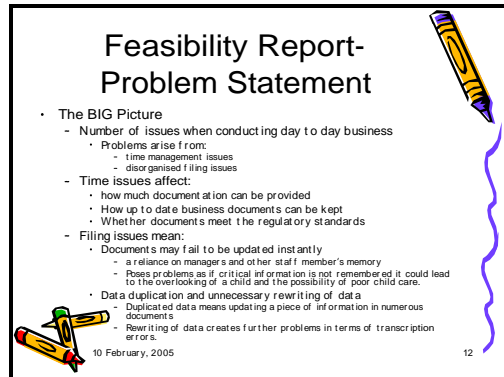
There may be pay disputes between staff and managers

#### ***Staff Time off arrangements***

Managers and other staff have to cover at short notice- reduce employee morale

Not enough staff to look after the children (child to staff ratio)

May be disputes in pay if not documented which staff are off when  
May mean the staff who fill in do not have correct qualifications to be looking after children- what if random inspection occurred?



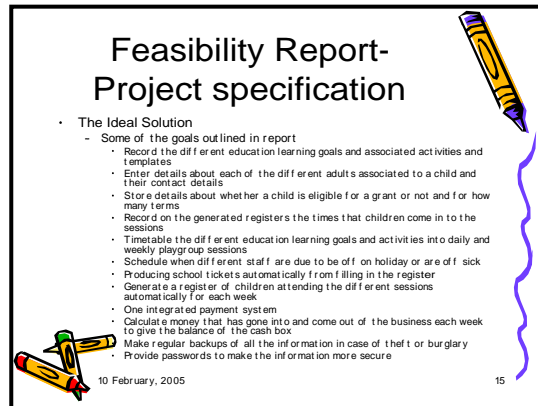
## **Slide 12- Problem Statement**

### **The Big Picture**

“Greenacres encounter a number of issues when conducting their day to day business. The problems arise from the underlying time management issues and disorganised filing issues. The issues of time affect how much documentation can be provided relating to the business as well as how up to date business documents can be kept. Due to lack of time business documents may also occasionally fail to meet the regulatory standards until the managers have more time to spend on them.

The filing issues also mean that documents may fail to be updated instantly and so a reliance on managers and other staff member’s memory is created. This poses problems as if critical information is not remembered it could lead to the overlooking of a child and the possibility of poor child care.

The problems of data duplication and unnecessary rewriting of data also occur in the current filing system, as many documents contain the same pieces of data. Duplicated data creates the problem of updating a piece of information in numerous documents and the rewriting of data creates further problems in terms of transcription errors.”



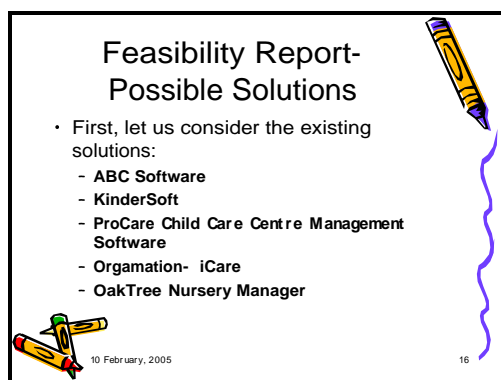
## Slide 15- Project Specification

### Further Specifications split into sections

Functional Specifications
Initial Information
Record details on each of the different sessions including cost, times and dates and the max. number of children that can attend sessions
Have a waiting list for different session types
Record details pertaining to grants and how they are handled
Record the businesses policies and rules regarding employees
Record the businesses policies and rules regarding child care
Record the different education learning goals and associated activities and templates
Record the different types of tuck children can have
Enrolment (Staff and Child)
Enter details about each of the different adults associated to a child and their contact details
Associate a child with a number of adults
Store full details about each child as required by the standards
Store details about whether a child is eligible for a grant or not and for how many terms

Store full details about staff and their qualifications
Recording Information
Record details about accidents
Record details about incidents
Record details about fire procedures and incidents
Record which children have had which tuck each day
Record on the generated registers the times that children come in to the sessions
Record the times that staff come in for each session
Timetabling Information
Be able to see the different information recorded for a particular day
Timetable the different education learning goals and activities into daily and weekly playgroup sessions
Add children to a register automatically by specifying when they are due to start in the calendar
Schedule when different staff are due to be off on holiday or are off sick
Provide a monitor of the staff available each day
Producing Information
Producing school tickets automatically from filling in the register
Produce a list of the early learning goals and activities that are planned for the year and the dates they are expected to be done on
Produce an updated list of emergency contact details for each child automatically
Generate a register of children attending the different sessions automatically for each week
Produce a list of the staff due in for a particular day
Produce weekly lists of the staff that have worked that week and the numbers of hours they have worked
Financial Processing
One integrated payment system
Produce a list of payments due and payments received for each child
Calculate the cost of tuck and provide a breakdown of the tuck a child has had each day
Calculate the fees payable for each child
Calculate money that has gone into and come out of the business each week to give the balance of the cash box
Non-Functional Specifications
Real-time updating
Storing all details in one place
Make regular backups of all the information in case of theft or burglary
Provide passwords to make the information more secure





### Slide 16- Possible Solutions

#### **Existing Solutions**

##### ***ABC Software***

This software was developed in Microsoft Access by RW Communications Ltd, a medium-sized UK based company (unlike ProCare below). Some of the functionalities of this software include:

- Address information for each parent
- Childs details per parent
- A find facility - Find by Childs name, parents name, address, postcode, telephone number etc.
- Medication for each child
- Emergency contacts
- Logging all types of allergies
- Responsible parties
- Timetables
- Reporting system producing over 15 different reports
- System security - Password protected
- Invoicing system - Generating weekly invoices and statements
- Payment area for invoices being paid. Logging all invoices

##### ***KinderSoft***

KinderSoft is a piece of software produced by Showcase Computer Systems in the UK. It claims that it will:

- Automate the management of your nursery
- Store all of your child/parent details
  - Including emergency contacts, doctor details, medical record, dietary information, allergies and more
- Manage bookings and waiting lists
  - By specifying start dates and end dates and the type of session required
- Provide different types of registers
- Automate your invoicing procedure
  - Including handling grant information and other government vouchers, and pricing on any of a range of pricing schemes (e.g. child, room etc.)
- Provide Staff management
  - Including recording staff details, employment dates, shift working, worker status, qualifications and holiday and sickness records to make payroll calculations easy
- Help your nursery meet OFSTED requirements

##### ***ProCare Child Care Centre Management Software***

This software is used by 12,000 nurseries, childcare centres and care providers worldwide. It has a modular format, allowing you to pick the business functions that you require to operate efficiently. The different modules include:

- Family Data and accounting
    - This module allows you to keep all the information about the children attending the centre, it has an attendance tracker to track children and staff, and it can help to deal with fee charges and grants.
- There is also the option to purchase the Pocket Attendance software for PDA's so emergency information and information about children's checking in times can all be taken out of the building in an emergency in the palm of your hand.

There is also the option for running a photo gallery of the children and maintaining a food program for the children.

- **Employee Data**

This module handles all the information about the employees of the business, including scheduling when they will be in and keeping track of when they are off on sick or have holidays.

- **Accounting Software**

This module deals with the financial side of the business that is paying bills and other expenses and looking at the total balance for the business.

There are further modules available that look at child to staff ratios and immunisation requirements

### ***Orgamation- iCare***

Orgamation provides a management software package specifically designed for child care centres, and preschools known as iCare. The functionalities include enrolment, scheduling, staffing, billing, accounting, financials, time and attendance, food program, waiting list, children and staff reviews and drop-in centres.

iCare is based on their DCMS 9003 technology which allows you to create your own tables fields forms and reports and configure the interface you are working with also.

It allows a children's database, contact database, family database and staff database to be kept with all the required data inside them.

It provides functions for recording attendance including checking in and out times for children and allows scheduling of future enrolments and staff requirements.

It can deal with a number of accounting needs such as staff payroll, bill payment and fee charging.

It can also generate a number of reports for managers, staff and parents to use.

If needed it can also provide functions for planning mealtimes.

### ***OakTree Nursery Manager***

OakTree Nursery Manager is a piece of software developed by ActiveCode Ltd to provide a simple way of managing the nursery efficiently. Some of the functionalities of this software include:

- **Session Details**
  - Specify a number of different session e.g. Playgroup Holiday etc. and how many children can attend. Generate a waiting list for each session
- **Adult Details**
  - Details of the adults including full name, home address, work address and relationships with associated children e.g. parent, carer, grandparent.
- **Child Details**
  - Details of each child including name, address, date of birth, sex, religion, discount, initial deposit paid, and any freehand notes.
- **Adjustments**
  - Any discounts for specified sessions.
- **Classes**
- **Showing the sessions that the child has been included in.**
- **Holidays**
  - Holiday periods can be recorded.
- **Related Adults**
  - Each child can be related to a number of adults.
- **Medical**
  - Various food and health allergies can be specified here for the child.
- **Various reports such as invoices, child details, outstanding invoices, milk report, registers and simple lists such as a list of children**
- **Milk Claim**
- **Record daily price of milk and number of children who qualify for free milk for that day.**
- **Security**
  - Encrypted database, restricted access to the data, stop children's addresses from being shown in children's details section



**Feasibility Report-  
Evaluation of solutions**

- Microsoft Access Database
- Microsoft SQL Server Database
- Web-based Solution
- Spreadsheet Based Solution
- Access Database and Spreadsheet modules

10 February, 2005

**Feasibility Report-  
Evaluation of solutions**

- Evaluate the solutions based on TELOS
  - Technical feasibility
  - Economic Feasibility
  - Legal feasibility
  - Organisational Feasibility
  - Social Feasibility
- Give reasons for accepting and rejecting each of the possible solutions

10 February, 2005

**Slide 18 &19- Evaluation of Solutions**  
**Using TELOS Evaluation (Summary of the report)**

**Microsoft Access Database- Outcome: ACCEPTED**

<b>T</b>	Feasible; author has enough knowledge of the software to produce a solution, software is available, hardware is available
<b>E</b>	Feasible; No cost for software as managers already have it, hardware is already present, no cost of production.
<b>L</b>	No legal implications
<b>O</b>	No organisational issues
<b>S</b>	Socially feasible; benefits for the community with increased competence and organisation

**Microsoft SQL Server Database- Outcome: REJECTED**

<b>T</b>	Feasible; author has enough knowledge of the software to produce a solution, software is available, hardware is available
<b>E</b>	Not Feasible; Cost of SQL Server exceeds cost limitation
<b>L</b>	No legal implications
<b>O</b>	The only added value is in networking; this benefit cannot be justified as there is no need for networking in the organisation
<b>S</b>	Socially feasible; benefits for the community with increased competence and organisation

**Web-based Solution- Outcome: REJECTED**

<b>T</b>	Not Feasible; No internet connection in the setting,
<b>E</b>	Not Feasible; The cost of internet over time outweighs the benefits.
<b>L</b>	Transmission of data over the internet, if not encrypted could mean implications in terms of the Data Protection Act
<b>O</b>	Benefits of web based application cannot be justified as the managers are unlikely to realise these benefits
<b>S</b>	Socially feasible; benefits for the community with increased competence and organisation

**Spreadsheet Based Solution- Outcome: REJECTED**


<b>T</b>	Feasible; author has enough knowledge of the software to produce a solution, software is available, hardware is available, PDA could be bought to increase spreadsheet usefulness
<b>E</b>	Feasible; No cost for software as managers already have it, hardware is already present, no cost of production. PDA could be feasibly bought for price limit of £400
<b>L</b>	No legal implications
<b>O</b>	Not Feasible; difficulty incorporating working practices into the spreadsheet nature, difficult to link pieces of information together
<b>S</b>	Not feasible; Information hard to find and sort heightening disorganisation


**Access Database and Spreadsheet Modules- Outcome: ACCEPTED**

<b>T</b>	Feasible; author has enough knowledge of the software to produce a solution, software is available, hardware is available, PDA could be bought to increase spreadsheet usefulness
<b>E</b>	Feasible; No cost for software as managers already have it, hardware is already present, no cost of production. PDA could be feasibly bought for price limit of £400
<b>L</b>	No legal implications
<b>O</b>	Increased benefits from this solution in emergencies
<b>S</b>	Socially feasible; benefits for the community with increased competence and organisation

## Feasibility Report- Feasible solutions

- Microsoft Access Database
  - Cost Estimate:
    - Backup costs: £20.00 - 60.00
    - Printing costs: ongoing ink cartridge costs: @15.00 per month
  - Time Estimate: 4 weeks to complete
  - Key Tasks:
    - Develop a full design specification
    - Make 'the bones' of the application
    - Fill application with data
    - Test application
    - Hand over and train end users
    - Feedback and modification
  - Evaluation Against Goals: See Notes





11 February, 2005

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### Slide 21- Feasible Solutions

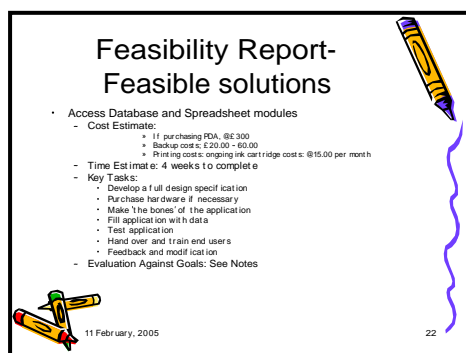
#### Microsoft Access Database

Functional Specifications	
Initial Information	How Accomplished
Record details on each of the different sessions including cost, times and dates and the max. number of children that can attend sessions	Input information into tables to be stored permanently
Have a waiting list for different session types	Generate a waiting list using tables and queries
Record details pertaining to grants and how they are handled	Input information into tables to be stored permanently
Record the businesses policies and rules regarding employees	Input information into tables to be stored permanently
Record the businesses policies and rules regarding child care	Input information into tables to be stored permanently
Record the different education learning goals and associated activities and templates	Input information into tables to be stored permanently

Record the different types of tuck children can have	Input information into tables to be stored permanently
<b>Enrolment (Staff and Child)</b>	
Enter details about each of the different adults associated to a child and their contact details	Input information using simple forms to store in tables
Associate a child with a number of adults	Associate a child to an adult using primary and foreign keys
Store full details about each child as required by the standards	Input information using simple forms to store in tables
Store details about whether a child is eligible for a grant or not and for how many terms	Input information using simple forms or generate automatically using query from grant info already stored and DOB
Store full details about staff and their qualifications	Input information using simple forms to store in tables
<b>Recording Information</b>	
Record details about accidents	Input information using simple forms to store in tables
Record details about incidents	Input information using simple forms to store in tables
Record details about fire procedures and incidents	Input information using simple forms to store in tables
Record which children have had which tuck each day	Input information using simple forms to store in tables
Record on the generated registers the times that children come in to the sessions	Input information using simple forms to store in tables
Record the times that staff come in for each session	Input information using simple forms to store in tables
<b>Timetabling Information</b>	
Be able to see the different information recorded for a particular day	Generate a viewing form of all the information for that day

Timetable the different education learning goals and activities into daily and weekly playgroup sessions	Use a form to associate goals to particular dates
Add children to a register automatically by specifying when they are due to start in the calendar	When adding child details into computer, add the date they are due to start, which will trigger their addition to the register for that day/week
Schedule when different staff are due to be off on holiday or are off sick	Use a form to timetable staff information for particular days and alter their payments for those days
Provide a monitor of the staff available each day	Use a viewing form to generate information on which staff are available/working each day
<b>Producing Information</b>	
Producing school tickets automatically from filling in the register	When a register has been filled in on the computer, use queries to generate a number of school tickets labelled with the school and age group
Produce a list of the early learning goals and activities that are planned for the year and the dates they are expected to be done on	From the goals and timetable information use a query to produce a report showing which goals are planned for each day/week/month/year
Produce an updated list of emergency contact details for each child automatically	Using queries select the appropriate information to generate a report that will be printed off
Generate a register of children attending the different sessions automatically for each week	Using queries generate a register viewing form/register document that can either be filled in on the computer or printed out
Produce a list of the staff due in for a particular day	Use queries to extract data to put into a document to be printed out detailing the staff for the day

Produce weekly lists of the staff that have worked that week and the numbers of hours they have worked	Use queries to generate a list that can be either viewed or printed out for further calculation
<b>Financial Processing</b>	
One integrated payment system	Integrate fee and tuck payments into one system using tables and forms
Produce a list of payments due and payments received for each child	By aggregating the payments due (tuck and fees) invoices and receipts can be generated from the stored information
Calculate the cost of tuck and provide a breakdown of the tuck a child has had each day	Use tables and queries to calculate tuck from information entered into a simple form about a child's tuck consumption each day
Calculate the fees payable for each child	Use tables and queries to calculate fees from information entered initially and when they have been registered at the session
Calculate money that has gone into and come out of the business each week to give the balance of the cash box	Use tables and queries to calculate the ongoing balances after entering inputs and outputs for the week- produce a document of this for accountant
<b>Non-Functional Specifications</b>	
Real-time updating	Information is updated in each of the different areas as soon as you enter it
Storing all details in one place	Details are all stored in one single application
Make regular backups of all the information in case of theft or burglary	This single application can be backed up onto CD or memory stick every day if necessary
Provide passwords to make the information more secure	Use passwords when opening the application



## Slide 22- Feasible Solutions

### Access Database with Spreadsheet Modules

Functional Specifications	
Initial Information	How Accomplished
Record details on each of the different sessions including cost, times and dates and the max. number of children that can attend sessions	Input information into tables to be stored permanently
Have a waiting list for different session types	Generate a waiting list using tables and queries
Record details pertaining to grants and how they are handled	Input information into tables to be stored permanently
Record the businesses policies and rules regarding employees	Input information into tables to be stored permanently
Record the businesses policies and rules regarding child care	Input information into tables to be stored permanently
Record the different education learning goals and associated activities and templates	Input information into tables to be stored permanently
Record the different types of tuck children can have	Input information into tables to be stored permanently

Enrolment (Staff and Child)	
Enter details about each of the different adults associated to a child and their contact details	Input information using simple forms to store in tables
Associate a child with a number of adults	Associate a child to an adult using primary and foreign keys
Store full details about each child as required by the standards	Input information using simple forms to store in tables
Store details about whether a child is eligible for a grant or not and for how many terms	Input information using simple forms or generate automatically using query from grant info already stored and DOB
Store full details about staff and their qualifications	Input information using simple forms to store in tables
Recording Information	
Record details about accidents	Input information using simple forms to store in tables
Record details about incidents	Input information using simple forms to store in tables
Record details about fire procedures and incidents	Input information using simple forms to store in tables
Record which children have had which tuck each day	Input information using simple forms to store in tables
Record on the registers the times that children come in to the sessions	Input information using simple forms to store in tables
Record the times that staff come in for each session	Input information using simple forms to store in tables
Timetabling Information	
Be able to see the different information recorded for a particular day	Generate a viewing form of all the information for that day
Timetable the different education learning goals and activities into daily and weekly playgroup sessions	Use a form to associate goals to particular dates

Add children to a register automatically by specifying when they are due to start in the calendar	When adding child details into computer, add the date that they are due to start, which will trigger their addition to the register for that day/week
Schedule when different staff are due to be off on holiday or are off sick	Use a form to timetable staff information for particular days and alter their payments for those days
Provide a monitor of the staff available each day	Use a viewing form to generate information on which staff are available/working each day
<b>Producing Information</b>	
**Producing school tickets automatically from filling in the register	When a register has been filled in on the computer, create a spreadsheet that can be sent to PDA that models the school tickets so children can be ticked off electronically
Produce a list of the early learning goals and activities that are planned for the year and the dates they are expected to be done on	From the goals and timetable information use a query to produce a report showing which goals are planned for each day/week/month/year
**Produce an updated list of emergency contact details for each child automatically	Using information in the database generate a spreadsheet that can be transferred to PDA
**Generate a register of children attending the different sessions automatically for each week	Use information in the database to create a spreadsheet register that can be transferred to a PDA for registration
Produce a list of the staff due in for a particular day	Use queries to extract data to put into a document to be printed out detailing the staff for the day

Produce weekly lists of the staff that have worked that week and the numbers of hours they have worked	Use queries to generate a list that can be either viewed or printed out for further calculation
<b>Financial Processing</b>	
One integrated payment system	Integrate fee and tuck payments into one system using tables and forms
Produce a list of payments due and payments received for each child	By aggregating the payments due (tuck and fees) invoices and receipts can be generated from the stored information
Calculate the cost of tuck and provide a breakdown of the tuck a child has had each day	Use tables and queries to calculate tuck from information entered into a simple form about a child's tuck consumption each day
**Calculate the fees payable for each child	Import data from database into spreadsheet application for easier and simple calculation
**Calculate money that has gone into and come out of the business each week to give the balance of the cash box	Use spreadsheets with macro to calculate the accounts which could be send to accountant on a disk rather than producing a document
<b>Non-Functional Specifications</b>	
**Real-time updating	Information is updated in the database as soon as you enter it – updated onto PDA manually
Storing all details in one place	Details are all stored in one single application
Make regular backups of all the information in case of theft or burglary	This single application can be backed up onto CD or memory stick every day if necessary
Provide passwords to make the information more secure	Use passwords when opening the application

**\*\* Starred are how this solution differs to just having Access Database**

## Appendix J – Prioritisation of Specifications

1 – Most Important

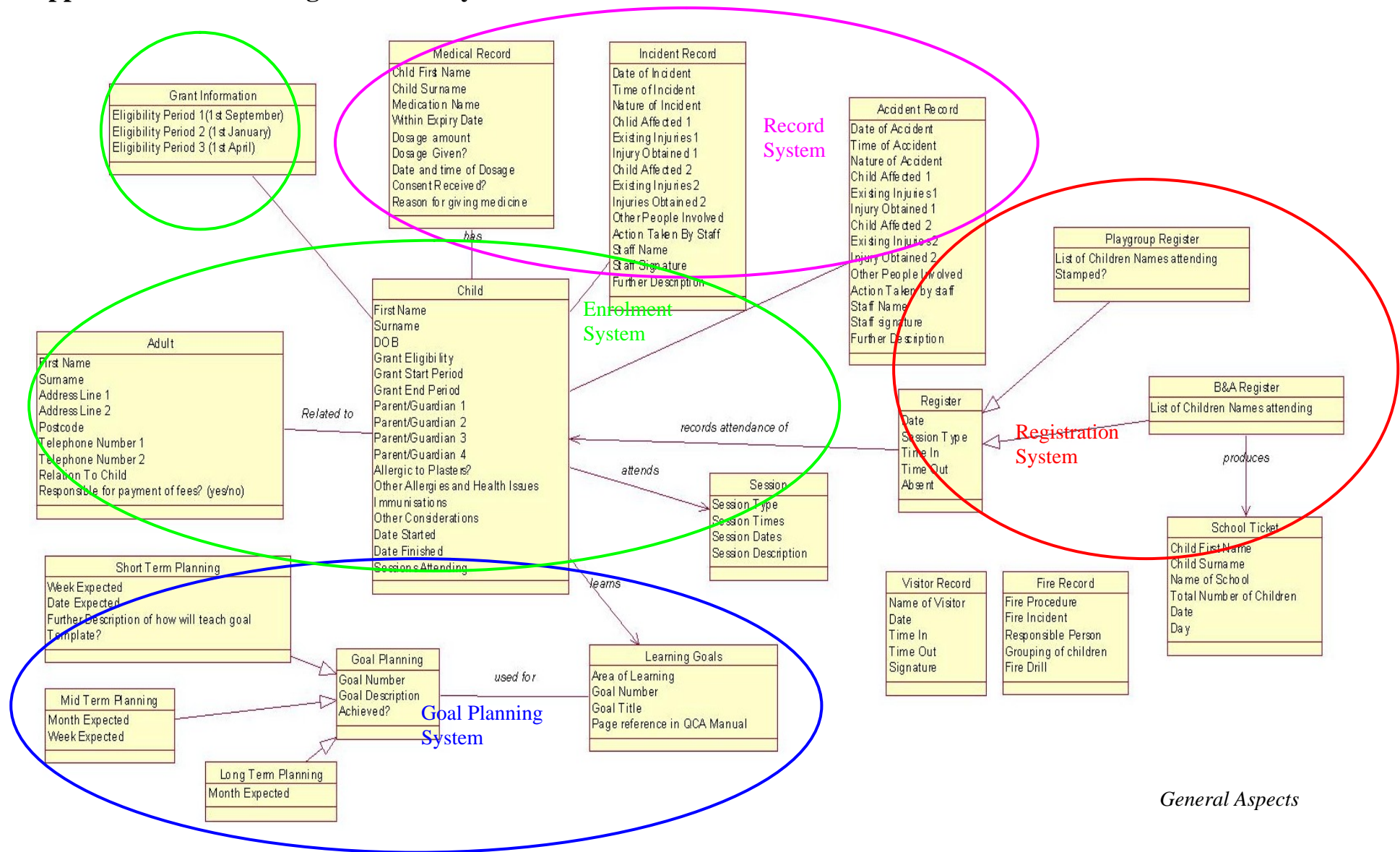
5 – Least Important

Goal Number	Goal/Specification	Priority
<b>Functional Specifications</b>		
<b>1. Initial Information</b>		
1.1	Record details on each of the different sessions including cost, times and dates and the max. number of children that can attend sessions	2
1.2	Have a waiting list for different session types	2
1.3	Record details pertaining to grants and how they are handled	2
1.4	Record the businesses policies and rules regarding employees	4
1.5	Record the businesses policies and rules regarding child care	2
1.6	Record the different education learning goals and associated activities and templates	4
1.7	Record the different types of tuck children can have	3
<b>2. Enrolment (Staff and Child)</b>		
2.1	Enter details about each of the different adults associated to a child and their contact details	1
2.2	Associate a child with a number of adults	1
2.3	Store full details about each child as required by the standards	1
2.4	Store details about whether a child is eligible for a grant or not and for how many terms	2
2.5	Store full details about staff and their qualifications	2
<b>3. Recording Information</b>		
3.1	Record details about accidents	1
3.2	Record details about incidents	1
3.3	Record details about fire procedures and incidents	3
3.4	Record which children have had which tuck each day	3
3.5	Record on the registers the times that children enter and leave sessions	2
3.6	Record the times that staff come in for each session	5
<b>4. Timetabling Information</b>		
4.1	Be able to see the different information recorded for a particular day	5
4.2	Timetable the different education learning goals and activities into daily and weekly playgroup sessions	4

Goal Number	Goal/Specification	Priority
4.3	Add children to a register automatically by specifying when they are due to start	1
4.4	Schedule when different staff are due to be off on holiday or are off sick	4
4.5	Provide a monitor of the staff available each day	5
<b>5. Producing Information</b>		
5.1	Producing school tickets automatically from filling in the register	1
5.2	Produce a list of the early learning goals and activities that are planned for the year and the dates they are expected to be done on	4
5.3	Produce an updated list of emergency contact details for each child automatically	1
5.4	Generate a register of children attending the different sessions automatically for each week	1
5.5	Produce a list of the staff due in for a particular day	4
5.6	Produce weekly lists of the staff that have worked that week and the numbers of hours they have worked	3
<b>6. Financial Processing</b>		
6.1	One integrated payment system	2
6.2	Produce a list of payments due and payments received for each child	1
6.3	Calculate the cost of tuck and provide a breakdown of the tuck a child has had each day	2
6.4	Calculate the fees payable for each child	1
6.5	Calculate money that has gone into and come out of the business each week to give the balance of the cash box	1
<b>7. Non-Functional Specifications</b>		
7.1	Real-time updating	1
7.2	Storing all details in one place	1
7.3	Make regular backups of all the information in case of theft or burglary	1
7.4	Provide passwords to make the information more secure	1
<b>8. Additional Specifications added by managers during session 23/02/05</b>		
8.1	Enter child's name and all information comes up on the click of a button- fees owed, session info, contact details etc	1
8.2	Produce receipts of payment for adults once they have paid as proof they have paid as well as recording this on the system	1

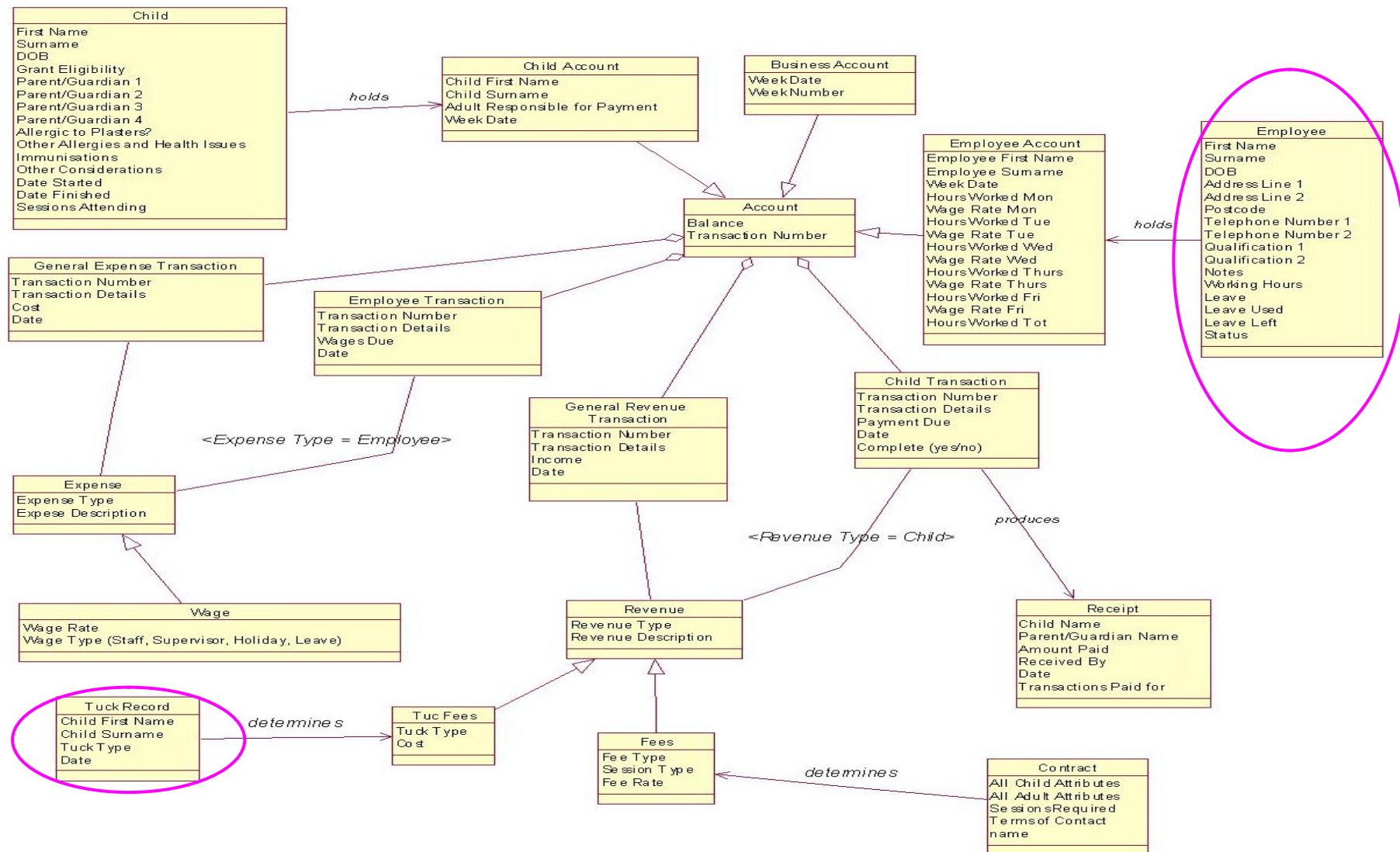


## Appendix K – UML Diagram of the System





## An Information System for Greenacres After School Care (Happy Days)



Accounting Aspect

## Appendix L – Prototype Tables, Forms, Reports and Queries

### Tables

(**Note:** These are the tables that were created for the prototype. More tables were created for the system that was handed over.)

The Null column indicates whether Nulls are allowed or not.

### Accident

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
date	Date/Time	NO			Date()	00/00/000 0;0;_	Date of Accident	Date of Accident
time	Date/Time	NO			Time()	00:00;0;_	Time of Accident	Time if Accident
nature	Text (200)	NO		“You must type in the nature of the accident!”			Nature of Accident	Nature of the Accident (what happened)
Child Affected 1	Number	NO	FK	“There must be at least one child involved!”	SELECT Child.first_name, Child.surname, Child.dob, Child.ID, FROM Child; bound column Child.ID		First Child Involved	First child involved in the Accident
existing_inj_1	Text (200)						Existing Injuries	Existing Injuries
injury_ob_1	Text (200)						Injury Obtained or Other Information	Injury Obtained or other information
Child Affected 2	Number		FK		SELECT Child.first_name, Child.surname, Child.dob, Child.ID, FROM Child; bound column Child.ID		Second Child Involved	Second child involved in the Accident
existing_inj_2	Text (200)						Existing Injuries	Existing Injuries
injury_ob_2	Text (200)						Injury Obtained or Other Information	Injury Obtained or other information
other_inv	Memo						Other People Involved	Other People Involved
action	Text (200)						Action taken by Staff	Action Taken by Staff
s_name	Number	NO	FK	“You must specify the member of staff that took care of the accident!”	SELECT Employee.first_name, Employee.surname, Employee.ID FROM Employee; bound column Employee.ID		Staff Name	Staff member’s name

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
s_sig	Yes/No	NO		=Yes "The Staff Signature must be obtained for the accident to be recorded. Parent's/Guardian's Signatures may be obtained later."	No		Staff Signature Obtained?	Staff Signature Obtained?
f_des	Memo						Any Further Description	Any further Description Necessary

## Adult

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
first_name	Text (20)	NO		"You must enter a first name (or at least a first initial) for the adult!"			Parent/Guardian First Name	Adult's First Name
surname	Text (20)	NO		"You must enter a surname for the adult!"			Parent/Guardian Surname	Adult's Surname
Relationship to Child	Text (50)	NO		"You must indicate the relationship that the adult has to the child"	"Mother";"Father"; "Guardian";"Auntie"; "Uncle";"Grand parent"; "Carer";"Doctor"; "Other";		Relationship To Child	Relationship to the child
add_1	Text (40)						Address	First line of address
add_2	Text (40)							Second line of address
p_code	Text (7)					>"OL"0\0LL;0;_	Post Code	Post Code, for example OL7 3RT
tel_1	Text (14)	NO		"You must enter a contact number for the adult!"		\0000&&000000;_	Contact Telephone Number 1	Contact Number 1, for example 0161 1234567 or 07345 675849
tel_2	Text (14)	NO		"You must enter a second contact number for the adult! (type the first number again if there is only one possible number)"		\0000&&000000;_	Contact Telephone Number 2	Contact Number 2, for example 0161 1234567 or 07345 675849

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
fee_resp	Yes/No				No		Responsible for payment of fees?	Is this adult responsible for the payment of fees?
c_f_name	Text (20)	NO	FK				Child's First Name	Child's First Name
c_s_name	Text (20)	NO	FK				Child's Surname	Child's Surname
c_dob	Date/Time	NO	FK			00/00/0000;0;_	Child's Date of Birth	Child's Date of Birth
c_ID	Number	NO	FK				Child's ID Number	Child's ID Number

## Child

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
first_name	Text (20)	NO		"You must enter a first name for the child!"	""	00/00/0000;0;_	Child's First Name	Enter the first name of the child
surname	Text (20)	NO		"You must enter a surname for the child!"			Child's Surname	Enter the surname of the child
dob	Date/Time	NO		"You must enter the child's date of birth!"		00/00/0000;0;_	Date of Birth	Enter the Child's Date of Birth
grant_eligibility	Yes/No	NO			No		Eligible for Grant?	Is the child eligible for a grant?
grant_start_period	Date/Time					00/00/0000;0;_	Grant Start Period	The period the child starts receiving a grant
plasters_allergy	Yes/No	NO			No		Is the Child allergic to Plasters?	Record if the child is allergic to plaseters
health_issues	Memo						Other Allergies and Health Issues	Does the child have any other allergies or health issues
immunisation	Memo						Child Immunisation Details	Record the child's immunisation details

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
other_con	Memo						Other Considerations	Record any other considerations that should be made for the child
date_start	Date/Time	NO		"You must enter the date the child started attending sessions!"	Date()	00/00/0000;0;_	Date Started	Record the date the child started attending sessions
p_child	Yes/No				No		Is the child attending Playgroup	Is the child attending Playgroup?
b_child	Yes/No				No		Is the Child attending any Before School Sessions?	Is the child attending any Before School Sessions?
a_child	Yes/No				No		Is the Child attending any After School Sessions?	Is the child attending any After School Sessions?
hol_child	Yes/No				No		Will the Child be attending any Holiday Sessions?	Will the Child be attending any Holiday Sessions?
school	Text (50)				"Greenacres School-Infants";"Greenacres School-Juniors";"St. Annes School-Infants";"St. Annes School-Juniors";		School Child Attends	The School the Child Attends
ID	Auto Number	NO	PRI					

**Employee**

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
first_name	Text (20)	NO		"You must enter a first name for the employee!"			Employee First Name	Employee's First Name
surname	Text (20)	NO		"You must enter a surname for the employee!"			Employee Surname	Employee's Surname
add_1	Text (40)	NO		"You must enter the employee's address."			Address	Address Line 1
add_2	Text (40)	NO		"You must enter the employee's address (enter the town in the second line if you have not put anything)"				Address Line 2
p_code	Text (7)	NO		"You must enter the employee's postcode!"		>"OL"0\ 0LL;0;_	Post Code	Post Code, for example OL3 4DG
tel_1	Text (14)	NO		"You must enter a contact number for the employee!"		0000&&000000;; _	Contact Telephone Number 1	Contact Telephone Number 1, for example 0161 1234567 or 07345 675849
tel_2	Text (14)	NO		" You must enter a second contact number for the employee! (type the first number again if there is only one possible number)"		0000&&000000;; _	Contact Telephone Number 2	Contact Telephone Number 2, for example 0161 1234567 or 07345 675849
qual_1	Text (40)						Qualification 1	Qualification 1
qual_2	Text (40)						Qualification 2 (If Applicable)	Qualification 2
notes	Text (80)						Additional Information	Additional Notes
wking_hrs	Text (11)					00:00\ -00:00;0;_	Regular Working Hours	Agreed Working Hours
wking_hrs_2	Text (11)					00:00\ -00:00;0;_	Regular Working Hours 2 (if Applicable)	Agreed Working Hours 2 (If Applicable)
tot_leave	Number	NO		"You must enter the total amount of leave that the employee is allowed!"			Total Amount of Leave (days)	Total Amount of Leave in days
leave_u	Number	NO					Leave Used	Leave Used in days
leave_r	Number	NO					Leave Remaining	Leave Remaining in days

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
Position Status	Text (20)	NO		"You must enter the type of position that the employee will hold!"	"Staff";"Supervisor"; "Manager";		Position Status	Status of the Employee
ID	Auto Number	NO	PRI					

## Incident

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
date	Date/Time	NO			Date()	00/00/0000;0;_	Date of Incident	Date of Incident
time	Date/Time	NO			Time()	00:00;0;_	Time of Incident	Time if Incident
nature	Text (200)	NO		"You must type in the nature of the incident!"			Nature of Incident	Nature of the Incident (what happened)
Child Affected 1	Number	NO	FK	"There must be at least one child involved!"	SELECT Child.first_name, Child.surname, Child.dob, Child.ID, FROM Child; bound column Child.ID		First Child Involved	First child involved in the Incident
existing_inj_1	Text (200)						Existing Injuries	Existing Injuries
injury_ob_1	Text (200)						Injury Obtained or Other Information	Injury Obtained or other information
Child Affected 2	Number		FK		SELECT Child.first_name, Child.surname, Child.dob, Child.ID, FROM Child; bound column Child.ID		Second Child Involved	Second child involved in the Incident
existing_inj_2	Text (200)						Existing Injuries	Existing Injuries
injury_ob_2	Text (200)						Injury Obtained or Other Information	Injury Obtained or other information

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
other_inv	Memo						Other People Involved	Other People Involved
action	Text (200)						Action taken by Staff	Action Taken by Staff
s_name	Number	NO	FK	"You must specify the member of staff that took care of the incident!"	SELECT Employee.first_name, Employee.surname, Employee.ID FROM Employee; bound column Employee.ID		Staff Name	Staff member's name
s_sig	Yes/No	NO		=Yes "The Staff Signature must be obtained for the incident to be recorded. Parent's/Guardian's Signatures may be obtained later."			Staff Signature Obtained?	Staff Signature Obtained?
f_des	Memo						Any Further Description	Any further Description Necessary

## Medical Record

Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
date	Date/Time	NO			Date()	00/00/0000; 0;_	Date Started Medication	Date started taking medication
first_name	Text (20)	NO	FK				First Name	First Name of Child
surname	Text (20)	NO	FK				Surname	Surname of Child
ID	Number	NO	FK				Child ID	Child's ID Number
med_name	Text (30)	NO		"You must enter the name of the medicine!"			Name of Medicine	Name of Medicine
exp	Yes/No	NO			No		Within Expiry Date?	Is the medicine within its expiry date?



Field Name	Field Type	Null	Key	Validation Rule and/or Text	Default Value/ Lookup Values	Input Mask	Caption	Description
dose	Text (20)	NO		"You must enter a dosage amount for the medicine!"			Dosage Amount	The required dosage amount of the medicine
dose_give	Yes/No						Dose Given?	Dose Given?
date_dose	Date/Time				Date()	00/00/0000; 0;_	Date dose given	Date dose given
time_dose	Date/Time				Time()	00:00;0;_	Time dose given	Time dose given
consent	Yes/No	NO		=Yes "Consent to administer a new medicine/dose must be obtained from the parent/guardian. This should be in writing if it is a new medicine. If it is a further dose verbal consent should be obtained either in person or by phone."			Consent Obtained?	Consent Obtained?
reason	Text (200)						Reason for giving medicine	Reason for giving medicine

## Forms

A screenshot of the forms implemented for the creation of the prototype is displayed below.

MainAccident	PageDisplayAdultForDispChild	PageEnrolChild
MainContact	PageDisplayAdultForModChild	PageModAdult
MainEmployee	PageDisplayChild	PageModChild
MainEnrolment	PageDisplayChild1AccFind	PageModEmp
MainEnter	PageDisplayChild1AccRec	PageRecordAccident
MainIncident	PageDisplayChild1IncFind	PageRecordAccidentFind
MainMedical	PageDisplayChild1IncRec	PageRecordFurtherDose
MainMenu	PageDisplayChild2AccFind	PageRecordFurtherDoseSearch
MainRecord	PageDisplayChild2AccRec	PageRecordIncident
MainRegister	PageDisplayChild2IncFind	PageRecordIncidentFind
MainTemp	PageDisplayChild2IncRec	PageRecordNewMedicalAdd
PageAddAdult	PageDisplayEmp	PageRecordNewMedicalFind
PageAddEmp	PageDisplayMed	PagesTemp
PageDisplayAdult	PageDisplayMed+Dose	

## Reports

A screenshot of the forms implemented for the creation of the prototype is displayed below.

AccidentFindChildReportCh1	AllEmpReport	IncidentRecSignReportCh2
AccidentFindChildReportCh2	AllMedDetChildReport	NewMedDetSignReport
AccidentFindSignReportCh1	ChildReportDisp	RegisterAChildren
AccidentFindSignReportCh2	ChildReportEnrol	RegisterBChildren
AccidentRecChildReportCh1	ChildReportMod	RegisterHChildren
AccidentRecChildReportCh2	Contract	RegisterPChildren
AccidentRecSignReportCh1	GrantChildrenReport	TicketGI
AccidentRecSignReportCh2	IncidentFindChildReportCh1	TicketGJ
AdultChildReportDispA	IncidentFindChildReportCh2	TicketSAI
AdultChildReportDispC	IncidentFindSignReportCh1	TicketSAJ
AdultChildReportEnrolC	IncidentFindSignReportCh2	
AdultChildReportModA	IncidentRecChildReportCh1	
AdultChildReportModC	IncidentRecChildReportCh2	
AllContactsReport	IncidentRecSignReportCh1	

## Queries

A screenshot of the forms implemented for the creation of the prototype is displayed below.

*  AccidentChildSearch	ChildDisp	PChildren
AChildren	*  ChildFindGen	ReportAdultChildDispA
*  AdultChildSearch	ChildrenGI	ReportAdultChildDispC
BChildren	ChildrenGJ	ReportAdultChildEnrolC
Child1DispAccFind	ChildrenSAI	ReportAdultChildModA
Child1DispAccRec	ChildrenSAJ	ReportAdultChildModC
Child1DispIncFind	EmpSearch	ReportAllContacts
Child1DispIncRec	GrantChildren	ReportChildDisp
Child2DispAccFind	HChildren	ReportChildEnrol
Child2DispAccRec	*  IncidentChildSearch	ReportChildMod
Child2DispIncFind	Med+DoseSearch	ReportEmp
Child2DispIncRec	*  MedSearch	ReportMedSearch

The queries that prompt for the child's name have a single asterisk next to them.

## Appendix M – Visual Basic Codes

Records found field code:

```
= " Records Found: " & Count(<fieldname>)
```

where *fieldname* is a piece of information that is guaranteed to be in the table being searched upon, i.e. the table's primary key

Navigation button code:

```
Private Sub Next_Click()  
On Error GoTo Err_Next_Click  
  
    DoCmd.GoToRecord , , acNext  
  
Exit_Next_Click:  
    Exit Sub  
  
Err_Next_Click:  
    MsgBox "This is the last Record!", vbOKOnly, "Records Found"  
  
    Resume Exit_Next_Click  
  
End Sub  
  
Private Sub Previous_Click()  
On Error GoTo Err_Previous_Click  
  
    DoCmd.GoToRecord , , acPrevious  
  
Exit_Previous_Click:  
    Exit Sub  
  
Err_Previous_Click:  
    MsgBox "This is the first Record!", vbOKOnly, "Records Found"  
  
    Resume Exit_Previous_Click  
  
End Sub
```

No Records Found code:

```
Private Sub Form_Open(Cancel As Integer)  
On Error GoTo Err_Form_Open  
Dim StID  
StID = Me!ID.Value  
DoCmd.Maximize  
Exit_Form_Open:  
  
    Exit Sub  
  
Err_Form_Open:  
  
    MsgBox "No Records Found", vbOKOnly, "No Records"  
    DoCmd.Close  
    Resume Exit_Form_Open  
  
End Sub
```

## Appendix N – Heuristic Criteria

Criterion	Measure of Achievement
Error Prevention	For the prototype, errors are prevented by highlighting and prompting users to enter information correctly and use only the buttons created.
Real world conventions	The terms used in the prototype and the user documentation should match terms used in the real world of describe terms that may be unfamiliar.
Practicability	The prototype should be easy to access although still secure, the information and features contained within it should be accessible and display in full. The user documentation should be readily available and particular descriptions easy to find.
Display of Information	The information displayed should be suitable for the function being performed. The users should not be overloaded with too much information or too much to enter at any time. Is additional information where needed easy to access. Is information well structured and easy to follow. Are colourings and layout appropriate.
Consistency and Standards	Have headings, fonts, sectioning and colours been consistently used throughout the prototype. Have similar layouts for forms, menus and reports been used throughout. Do the forms and reports display in a consistent manner (maximised within the window) Have appropriate menu bars been used consistently throughout. Is the user manual consistent in its description of particular items, such as message boxes. Is the user manual consistent in its level of detail of descriptions of functions.
User Control, freedom and efficiency	Is the prototype easy to navigate and applies consistent navigation buttons positioned in the same places. Is the menu structure sufficiently shallow to allow easy navigation through the menus. Is it obvious what the navigation buttons intend to do or where they take you to if pressed. Are there any cumbersome operations, do the operations performed quickly (max. 3 seconds waiting time?). Is the user documentation easy to navigate and search through and talked about consistently.
Error Messages	Are any error messages that are shown too technical for user's to understand/ do they explain what went wrong and how to avoid seeing the error message again.
Flexibility	Does the prototype cater for users with different levels of technical knowledge. Is the user manual sufficient to cater for users with different levels of knowledge.
Help information	Is help information easily found and appropriately highlighted. Has help information been appropriately implemented for buttons and fields. Does the user know where to look for help in both the prototype and user manual